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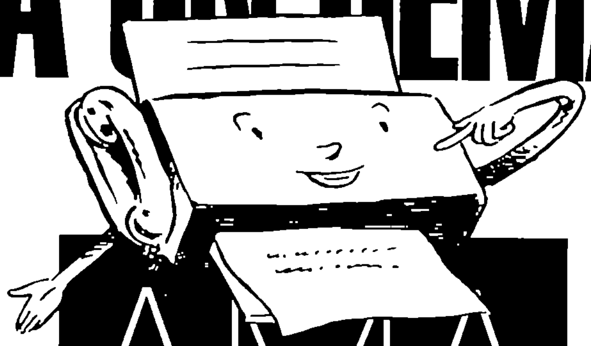

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Entry Barriers: A Dull-, One-, or Two-Edged Sword for Incumbents? Unraveling the Paradox from a Contingency Perspective

The long-held precept of equating entry barriers with sustainable incumbent advantage increasingly is met with skepticism as incidents of innovative late entrants leapfrogging over market incumbents become more pervasive across industries. Ostensibly, the reassessment of the traditional assumptions underlying entry barrier strategy has become imperative; to this end, the authors present a framework that investigates the contingent effects of incumbents' barrier building on their own performance. Specifically, the authors examine five types of entry barriers (capital requirements, cost advantages, switching costs, distribution access, and proprietary assets) for the nature of their impact in the following presupposed yet unresolved roles: (1) as effectual versus ineffectual entry deterrents and (2) as enablers versus inhibitors of incumbents' innovativeness. In addition, the authors take other variables into account (i.e., competitors' innovativeness and incumbents' market and technological orientation) to identify the contingencies of the framework. Using data from Korean consumer product industries, the authors empirically test and substantiate the variable (i.e., positive, negative, and neutral) impact of entry barriers on incumbents' performance.

> Much of the strategy literature in the 1980s focused on maintaining competitive advantage by building structural barriers to entry. Although this is a valid approach, it can blind a firm to consumer needs and the advantages of innovation.
>
> —Thomas S. Robertson and Hubert Gatignon

In the past decade, the marketplace has witnessed an ever-increasing number of late entrants leapfrogging into market-leader positions on the strength of their successful innovations (Shankar, Carpenter, and Krishnamurthi 1998). For example, within just a few years of market entry, 3Com's Palm Pilot has leapfrogged over Sharp's Wizard in the personal electronic organizer category, and Amazon.com over Barnes & Noble in the book-retailing industry. Moreover, as the breakneck pace of technological advancements continues ubiquitously across industries, shifts in technological standards as well as customer needs are becoming more frequent and even more pronounced with time and therefore are creating a vast window of opportunity for innovative challengers (Markides 1997, 1998). As a result, it is becoming more important than ever for incumbents to seek out an effectual means of protecting their market positions against the onslaught of competitive threats—particularly with respect to the innovative kind.

In search of a definitive solution to this predicament, calls for a reassessment of the traditional preemption practices—namely, the assumptions underlying the entry barrier strategy—have been on the rise (Markides 1998; Robertson and Gatignon 1991). Specifically, the strategy literature long has considered entry barriers to be, foremost, value-creating mechanisms for incumbents in two ways: (1) by deterring new competitive entry into the industry and, in turn, (2) by rendering these incumbents more lead time to engage in innovations—both of which are aimed at preserving the incumbents' advantage (Bain 1956; Gilbert and Newbery 1982; Porter 1980, 1985).

Over the years, however, the presumed efficacy of entry barriers has been in question as several studies have reported findings counter to the traditionally held assumptions: Some have found entry barriers to be rather ineffectual in thwarting competitive entry (Yip 1982a), whereas others have noted that barriers may even compromise incumbents' competitiveness by discouraging their corporate innovativeness (Zahra, Nash, and Bickford 1995). That is, as incumbents look to barriers as a safeguard against entry, a prolonged overreliance on these structures may cultivate unwillingness or inability to engage in innovations. In light of the heightened challenges from innovative entrants, unraveling the controversies surrounding entry barriers' role—as (1) effectual versus ineffectual entry deterrents and (2) enablers versus inhibitors of incumbents' innovativeness—has taken on a greater strategic significance.

In this context, a detailed analysis into barrier building and its associated dynamics is warranted toward reconciling the extant discordant findings. We therefore propose to trace the two key standing assumptions of barrier building along their contingent routes of impact, as each path may exert a

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distinct impact (i.e., magnitude- and/or direction-wise) on incumbents' performance. In this respect, we hypothesize that the proposed contingency model accounts for the variable nature of the reported underlying relationships (i.e., the value-adding, -destroying, or null aspects), which simply cannot be explained from a net impact standpoint. In addition, we account for the effects of (1) barrier types identified in Porter's (1980) topology (capital investment, cost efficiencies, switching costs, distribution access, and proprietary assets), (2) incumbents' market and technological orientation, and (3) incumbents' innovation portfolio strategy.

Background

Barrier Building: Value-Adding, Ineffectual, or Value-Destroying Endeavor?

The concept of entry deterrence, first introduced by Bain (1956), is founded on the general premise that an array of structural characteristics in a given industry may pose conditions adverse to market entry for potential competitors. Bain (1956) termed these mechanisms "barriers to new competition," and the key implication was that the construction of such entry deterrent mechanisms can aid market incumbents in limiting the number and the intensity of competition in their respective industries and therefore enable them to become the exclusive beneficiaries to supranormal, long-term industry profits (Karakaya and Stahl 1989; Kerin, Varadarajan, and Peterson 1992). Not surprisingly, the notion of barriers has attracted steadfast attention from scholars and practitioners alike for barriers' assumed role in preserving incumbents' success. A review of the accumulated research reveals three streams of literature on entry barriers, which cast diametrically different views on their roles—as (1) value-adding, (2) ineffectual, or (3) value-destroying mechanisms; we highlight the key facets of each of the views as follows.

The good (value-adding). The first stream of research, which focuses simply on the entry-deterring aspect of barriers, still represents the dominant school of thought in the incumbency literature. One of the most comprehensive studies to date is the one by Karakaya and Stahl (1989), which uses a simulated market entry context to examine the efficacy of the six structural barriers identified in Porter's (1980) topology. In their study, Karakaya and Stahl (1989) find that all types in the topology discourage entry, though some reportedly are more likely to do so than others.

Over the past several decades, the barrier concept has been substantially expanded from Bain's (1956) original notion (economies of scale, differentiation, cost advantages) to include, for example, capital requirements (Eaton and Lipsey 1980; Porter 1980), switching costs (McFarlan 1984; Porter 1980), access to distribution (Porter 1980, 1985), advertising (Comanor and Wilson 1967; Demsetz 1982; Harrigan 1981), research and development (R&D) (Schmalensee 1983), patents (Mansfield, Schwartz, and Wagner 1981), and reaction to entry (Needham 1976) (for a detailed review, refer to Karakaya and Stahl [1989] and Kerin, Varadarajan, and Peterson [1992]). Reflecting the long-held conviction that barriers provide a secure protective covering, the practice of barrier building has become institutionalized across incumbent firms and shows no sign of waning (Makadok 1998).

The bad (ineffectual). In contrast, just as noteworthy—though less numerous—are studies that indicate otherwise. That is, despite the wide array of barriers at the incumbents' disposal, these studies find that nonincumbent firms nonetheless attempt entry into these "protected" markets and that some even surpass incumbents in terms of market success (Cooper and Schendel 1976; Shankar, Carpenter, and Krishnamurthi 1998). Yip (1982a), on the basis of a survey of nearly 800 markets, forwards a twofold explanation for such market dynamics. First, the efficacy of barriers in thwarting competitive entry at the outset seems somewhat overstated: "contrary to traditional economic theory and marketing managers' beliefs, most types of barriers seldom deter entrants. For example, high-barrier markets are no less likely to be entered than those with low barriers" (Yip 1982a, p. 86).

Moreover, when the first line of defense has been broken, the intended secondary task of barriers is then to delimit the market success of the perpetrators. Incumbents, however, have experienced only a limited success in this area as well: The efficacy of barriers has been actualized against only those possessing less "skills" than the incumbents (Markides 1997, 1998; Robertson and Gatignon 1991; Yip 1982a). In other words, with respect to innovative challengers, the preemptive barriers appear to provide little or no protection for the incumbents (Cooper and Schendel 1976; Markides 1997, 1998; Zahra, Nash, and Bickford 1995).

The rationale is that innovative entrants supposedly can negate the preemption efforts of barriers by fundamentally changing the accepted structure of the industry (Gort and Wall 1984; Ruef 1997). Innovative entrants, by definition, bring forth a revolutionary change to the entered industry, which in turn enables them to exploit new opportunities in their served market. As barriers typically have been designed with the incumbent's current platform as the reference, innovative latecomers can leverage their radical innovations to circumvent these imposed hurdles (Markides 1998). For example, the Swiss watch industry as a whole was dealt a severe blow when Japanese companies entered the market in the 1970s with quartz-movement technology and successfully sidestepped the proprietary know-how and cost barriers associated with producing the traditional mechanical movements (Taylor 1993).

The ugly (value-destroying). Although the possibility of entry barriers' ineffectiveness may pose a considerable strategic threat to the incumbents, a more serious cause for concern is the potential fallout on the incumbents' competitiveness. In particular, as the platform for competition increasingly is played out on the innovative dimension, any adverse impact on incumbents' innovation strategy would be a detriment to the firms' competitiveness. Dougherty and Hardy (1996, p. 1120) claim that incumbents are "especially challenged by changes in technology ... (and) must become more innovative if they are to survive." If incumbents choose to rely wholly on barriers to dispel innovative challenges while failing to adapt to the changing industry conditions, the entryway for such threat is likely to be magnified many times over (Lawler and Galbraith 1994).

Notwithstanding the caveat, many incumbents still follow this very pattern of behavior at the expense of compromising their innovative positions in the marketplace (Mokyr 1992). A recent notable example has been documented in the rechargeable battery market: Incumbents VARTA and SAFT, propelled by a false sense of security from structural barriers (patents), have clung to their past successes with the nickel–cadmium platform, which is now becoming obsolete—all the while failing to sustain their commitment to the needs of the marketplace. Sony seized this opportunity by offering a revolutionary lithium-ion platform (a relatively lighter, long-lasting alternative) and in turn has relegated the inertia-laden firms to imminent demise (Lee 1996).

Several explanations have been suggested as to why such inertia-laden disposition may arise as a result of barrier building, including arrogance due to the past guarded success (Lieberman and Montgomery 1988), unwillingness to cannibalize the incumbent platform (Chandy and Tellis 1998; Ghemawat 1991), escalation of commitment (Tang 1988), complacency toward technological trends (Mansfield, Schwartz, and Wagner 1981; Robertson and Gatignon 1991), or any combination of these. The commonality across these pretexts is that structural barriers are regarded as instrumental in catalyzing a status quo–oriented climate in their patron organizations, which in turn becomes a detriment to sustaining the incumbents' advantage—especially in the face of ever-intensifying onslaught from innovative competitors.

In summary, structural barriers, whose sole intended purpose was to create value for incumbents through protection and lead time, paradoxically have also been associated with ineptitude or, even worse, with inhibiting the innovative positions in the same organizations they were to have furthered. To this effect, some scholars have even referred to structural barriers as a "two-edged sword" (Lieberman and Montgomery 1988; Zahra, Nash, and Bickford 1995)—yet without offering a blueprint for mitigating the adverse effects. In this context, we next discuss how, if at all, a contingency perspective may shed some light on the paradoxical linkage between barrier deployment and incumbents' ability to sustain their competitive advantage.

Motivation for a Contingency Perspective

A key reason behind the enduring ambiguity over the valence of entry barrier strategy may be ascribed to the selective focus of prior research, which principally has concentrated on the end result of the preemption strategy with little or no attention to the underlying processes involved. In other words, the extant preoccupation with the final impact on incumbents' firm performance has overshadowed potentially critical facets inherent to the entry barrier strategy.

Upon synthesizing the accumulated evidence reported across the preemption literature, there appear to be two distinct routes of influence emanating from structural barriers—one involving market-entry dynamics and the other related to incumbents' innovativeness—both of which are deemed to have a significant bearing on incumbents' advantage. Each route, however, is likely to carve out a different path to performance, as inherently different elements are expected to be at work under the two circumstances. In this respect, by isolating the contingent barrier-associated effects, our contention is that identifying key factors associated with incumbents' advantage may be facilitated. In turn, the discordant findings on the valence of barrier-building strategies can perhaps be better understood and even reconciled. We therefore propose to explore the contingencies of the barrier–incumbency relationship.

Conceptual Model and Hypotheses on the Incumbency Framework

The schematic diagram of our conceptual framework is presented in Figure 1. We deliberate the conceptualization of the contingency framework and the associated hypotheses one issue at a time, by first addressing the controversy underlying entry barriers as entry deterrents and then discussing the controversy as to whether barrier building exerts fostering or inhibiting influence on incumbents' own innovativeness.

Route 1: Preemptive Barriers and Market Entry Dynamics

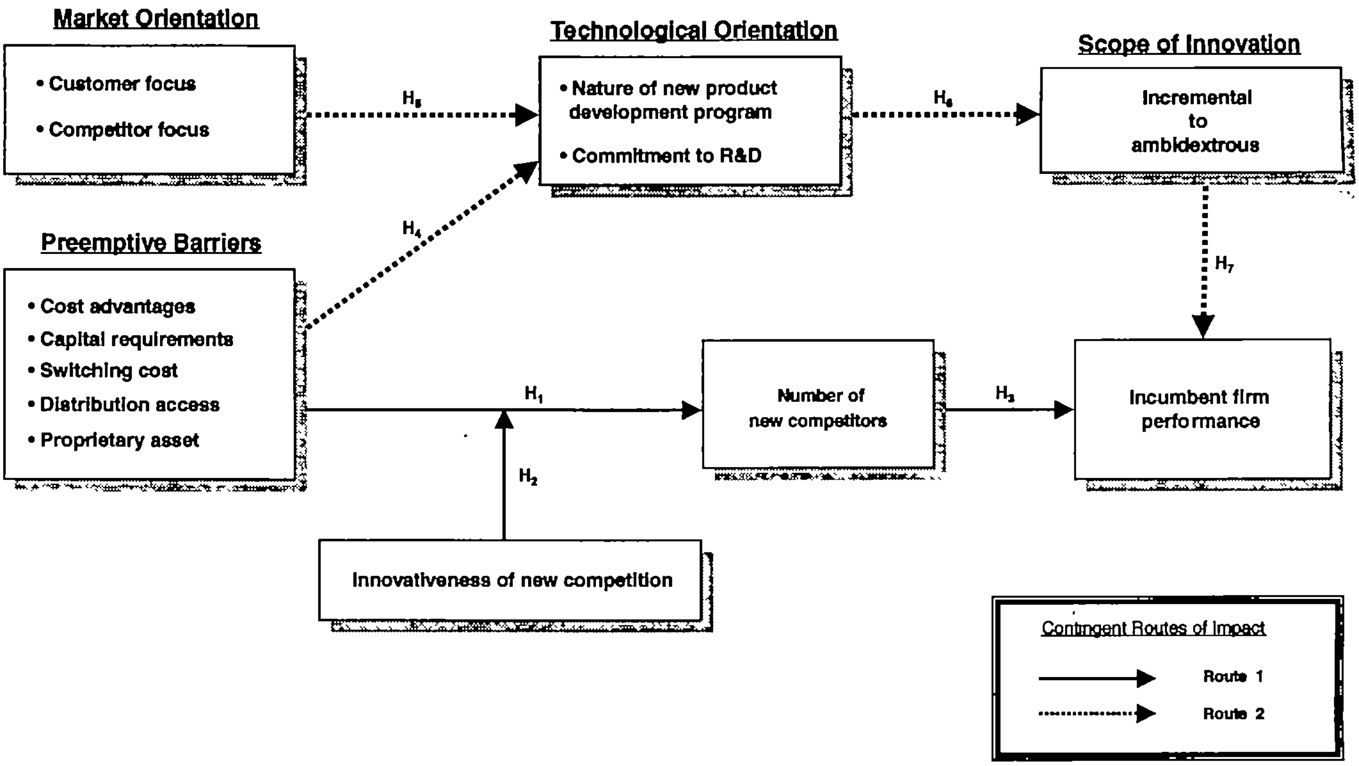
The categorical intent behind entry barriers has always been to secure a protective business environment for incumbents by mitigating competitive threats into the industry. Whereas the traditional assumption implicitly or explicitly posits that entry barriers offer a general protection against competitive entries of all types, the accumulated evidence over the years increasingly warrants a qualification to this precept. As previously noted, entry barriers may provide a less-than-impregnable barricade for the marketplace, particularly against the challenges from highly innovative entrants (Gort and Wall 1984; Ruef 1997; Tushman 1997).

Our contention is that the failure to differentiate the competition on the extent of their innovativeness perhaps constitutes one source of controversy surrounding the efficacy of entry barriers. In other words, that some researchers have found that barriers delimit entry (e.g., Bain 1956; Karakaya and Stahl 1989; Porter 1980) whereas others have not (e.g., Yip 1982a; Zahra, Nash, and Bickford 1995) may not be all that inconsistent—that is, if the innovativeness of the challengers turns out to moderate the efficacy of barriers, as is increasingly surmised.

Accordingly, by synthesizing the extant evidence from a moderated-effects perspective, we predicate the following two hypotheses: First, we expect structural barriers, on the whole, to exhibit entry-deterring qualities against the market challengers. Second, we hypothesize that the efficacy of these entry barriers will vary contingent on the innovativeness of the market challengers. In other words, our proposition is that the number of competitors entering an industry is a resultant combination of two opposing influences: (1) the presence of barriers and (2) the innovativeness of new competition. In tandem, these two hypotheses, if corroborated, should offer a plausible explanation to the extant discord on the issue of whether entry barriers indeed mitigate competitive entries into the marketplace. Stated formally,

> H_1: Entry barriers have a delimiting effect on the entry of new competitors into the industry.
>
> H_2: The preemptive efficacy of entry barriers is negatively moderated by the innovativeness of the competitive entrants

FIGURE 1
Hypothesized Entry Barriers' Impact on Incumbent Firm Performance



In turn, we expect the number of new competitors entering the industry to have a negative repercussion on incumbents' performance. For example, Yip (1982b) reports overall reductions in both market share and profitability for incumbents by an average of 12% and 10%, respectively, due to competitive entries. However, in an experimental setting, Carpenter and Nakamoto (1989) find that only innovative competitors take significant share away from incumbents and that noninnovative ones impart minimal impact or even boost incumbents' advantage; however, their conclusions are drawn in a context totally devoid of entry barriers. In a more representative context, we expect the noninnovative competitors that have entered the market despite barriers to possess relative strengths on other dimensions (e.g., cost), which could still present a formidable challenge to the incumbents. Therefore, in the post–market entry context, we postulate that all competitors, regardless of the type, show a robustly negative effect on the incumbents. Therefore, we simply posit that

H_3: The number of new competitive entrants into the industry will be negatively associated with incumbents' performance.

Apart from the ongoing debate on preemptive barriers in the role of entry deterrents, these structural obstacles have also become implicated in a major controversy of a different domain—the incumbents' own organizational innovativeness—which is addressed next.

Route 2: Preemptive Barriers, Market Orientation, and Incumbents' Innovativeness

Recent studies on corporate performances have thoroughly underscored the importance of a firm's technological orientation on the success of organizational innovations and, in turn, on the firm's overall performance (Gatignon and Xuereb 1997; Han, Kim, and Srivastava 1998). The rationale is that a firm's technological orientation, as a key facet of corporate culture, fosters a strong organizational commitment to R&D, as well as to proactive adoption of new technologies for new products and business operations—all deemed increasingly requisite in surviving today's competitive business environment exacerbated by innovative threats.

Consistent with this notion lies the other strategic intent behind barrier building. That is, in addition to delimiting entry, barriers also have been entrusted to bolster the incumbents' technological orientation, which too is aimed at sustaining incumbents' advantage (Robertson and Gatignon 1991). The supposition is that entry barriers will provide some buffer against the competition, thus enabling the incumbents to explore new, innovative options (i.e., radical and/or next-generation, technology-based strategies) in an effort to head off the competition further (Tushman 1997). After all, it was this kind of corporate mind-set on the part of the incumbents that brought about their current position of advantage in the first place (Markides 1998).

Over the years, however, concerns over entry barriers have been on the rise as these structures have been noted to impart the exact opposite of the intended effect on incumbents' technological orientation (Lawler and Galbraith 1994; Robertson and Gatignon 1991). Specifically, entry barriers are suspected of incidentally inciting undesired responses within the incumbent organizations (e.g., arrogance, complacency, escalating commitment to the status quo), which could irreparably degrade the firms' overall technological orientation (Mokyr 1992). Apparently, these developments are not such uncommon occurrences, as is evidenced by the emergence of designations such as "incumbent inertia" (Lieberman and Montgomery 1988; Zahra, Nash, and Bickford 1995), "fat-cat effect" (Fudenberg and Tirole 1984), and "dinosaur syndrome" (Lawler and Galbraith 1994) that have evolved in reference to this effect over industrial history.

At present, however, little is known about why some incumbent firms, such as Micro Pro (word processing software), Atari (personal game console), and Docutel (automatic teller machines), have fallen victims to incumbent inertia, whereas other firms, such as Sony (consumer electronics) and Qualcomm (wireless communications technology), manage to resist the reaches of this dinosaur syndrome. From a strategic standpoint, addressing this void is not only imperative but also overdue, particularly in light of the exigency accentuated in the summary statistic of its consequences (Mokyr 1992): That is, of the 100 leading incumbent firms in the United States at the turn of the century, all but 16 have either perished or become marginalized as the result of having compromised their technological orientation. Therefore, to understand comprehensively the factors that contribute to incumbent inertia, the focus must be not only on the sources of negative influence but also on the sources that may contribute to the enhancement of technological orientation in incumbent organizations.

To this end, the presumed link between entry barriers and incumbent inertia warrants a closer inspection, because the accumulated understanding on the topic has come only in the form of case studies (Ghemawat 1991) or anecdotal accounts (Cooper and Schendel 1976; Lieberman and Montgomery 1988). Although the extant literature provides some rationale into the reportedly negative nature of the relationship in question, without an empirical corroboration of the posited effect, much ambiguity over the robustness of this general relationship persists—not to mention the incertitude over this presumed link across each barrier type.

As a result, the possibility of some barriers actually bolstering the level of technological orientation in incumbents (which had been the other key premise behind barrier building) has not been ruled out. After all, a small but significant number of incumbents still somehow manage to sustain high levels of technological orientation despite barrier building. Nevertheless, with no a priori evidence—not even case-based or anecdotal—to support this effect, we propose an exploratory look into this source of ambiguity with a de facto hypothesis:

> H_4: All entry barriers have a negative influence on incumbents' technological orientation.

More fundamentally, however, there is a growing belief that efforts to understand better the apparent heterogeneity in technological orientation across incumbents would be amiss unless the effects of a firm's corporate culture are accounted for first. Markides (1998, p. 41) speculates that "the need to develop the culture [and] mind-set ... [and] to continually question the current success" is the principal distinction underlying the inertia-ridden versus inertia-resistant incumbents. This notion of turning to corporate culture for answers is parallel to the precept forwarded by Leonard-Barton (1992) that all issues in organizational research should be traced down to the kernel of the firm itself, which she denotes the firm's market-focused culture. In other words, every facet of corporate demeanor is deemed a reflection of a firm's cultural norms and values, and the logical implication is that the underlying cultural components should explain much of the variation found in technological orientation across the incumbents.

To this end, a closer inspection reveals that the organizational literature has characteristically captured the corporate culture with the market orientation construct (i.e., Day and Wensley 1988; Deshpandé, Farley, and Webster 1993)—a composite of norms and values governing corporate strategy over two strategic domains: (1) customer focus and (2) competitor focus. Because the former promotes a continuous, proactive posture toward meeting customers' exigencies and the latter places a top priority on the scanning of competitors in formulating market strategies, a firm's market-oriented culture has been shown ultimately to influence not only its corporate performance (Deshpandé, Farley, and Webster 1993; Gatignon and Xuereb 1997; Jaworski and Kohli 1993; Slater and Narver 1994) but also, more immediately, its technological orientation (Han, Kim, and Srivastava 1998). Similarly, Han, Kim, and Srivastava (1998) recently demonstrated that a balanced effort on customer and competitor focus heightens technological orientation in the retail banking sector. This finding provides some credence to Markides's (1998) proposition, but because Han, Kim, and Srivastava's sampling pool was limited to a single industry in a single U.S. state (i.e., the number of incumbents represented an inconsequential figure), the generalizability of these results to an incumbent inertia context yet remains equivocal.

When framed in the incumbency context, we expect strong vigilance on both customer and competitor focus to work toward mitigating all forwarded causes of degradation in technological orientation—whether it be arrogance, complacency, or escalation of commitments—because (1) a strong commitment to customers should impel the incumbents to consider new technology as a viable option in meeting customers' needs, and furthermore, (2) a competitor-conscious attitude should keep the incumbents well abreast of emergent competitive technologies or even promote a proactive engagement in developing one. Thus, we hypothesize that a strong market orientation will have a fostering effect on incumbents' technological orientation:

> H_5: A market-oriented culture has a positive influence on the technological orientation of incumbent organizations

In essence, the preoccupation with maintaining a strong technological orientation in incumbent firms reflects the underlying concern for their corporate innovation strategy. Technological orientation, as a representation of corporate disposition toward new technology, unequivocally plays a central role in shaping the direction of incumbents' organizational innovations. Evidently, without a concerted effort on sustaining technological orientation, there appears to be an inherent bias toward incremental (versus radical) types of innovations on the part of incumbents. Specifically, all incumbents, in one form or another, engage in some type of preemption activity geared at protecting the market advantages typically grounded in their initial technological platform (Cooper and Schendel 1976; Yip 1982b). This process in itself, however, often sustains incumbents' commitment to the traditional technology, which in turn further entrenches the old platform onto the core of incumbents' corporate strategy (Collier 1985; Tang 1988; Zahra, Nash, and Bickford 1995). Apparently, allocating scarce resources aimed at protecting original platforms can create a type of escalating-commitment problem, thus "locking in" these organizations to the impending obsolescence (Markides 1998; Tang 1988).

Not surprisingly, such investment decisions often have been linked closely to the scope of incumbents' innovations: That is, investments toward the initial platform typically come at the expense of a highly innovative R&D program. The result is that the general focus of innovation tends to assume a disproportionate bias toward the incremental type (Christensen and Bower 1996; Collier 1985). Therefore, without a conscientious effort to sustain a strong level of technological orientation, radical innovations will be compromised within the incumbents' scope of innovations. Conversely, a strong technological orientation should foster ambidextrous innovations (i.e., a portfolio consisting of both incremental and radical types), which Tushman (1997) forwards as an essential strategy for surviving the accelerated pace of technological shifts today.

> H_6: Strong (versus low) levels of technological orientation encourage ambidextrous (versus solely incremental) innovations in incumbent organizations.

Ultimately, by pursuing ambidextrous innovations, incumbents' vulnerability to innovative challenges is likely to be reduced considerably down the road through their readiness to "create or respond to radical shifts in the environment" (Tushman 1997). Otherwise, as Collier (1985) points out, pursuing incremental innovations alone is likely to leave the incumbents prone to a rather reactionary innovation strategy, which is deemed less than optimal: Incumbents "tend to respond ineffectively to technological change in one of two ways: Either they ignore the new technology until it is too late; or they attempt to graft the new technology onto the existing operation … [, which] rarely succeeds" (Collier 1985, p. 28).

Specifically, by maintaining a strong technological orientation, incumbents are better positioned to manage the evolutionary cycles of innovations in their respective industries, which generally consist of three parts: (1) a discontinuous innovation setting a new paradigm, followed by (2) a stream of incremental improvements, until (3) another radical shift in the industry takes place (Tushman 1997). Therefore, the strategy of pursuing both incremental and radical innovations in tandem should facilitate incumbents' management of each of the three phases, which in turn should ultimately translate into superior levels of corporate performance:

> H_7: Ambidextrous (versus solely incremental) innovation strategy has a positive impact on incumbents' performance.

Research Design

Sample

The sample consists of 127 Korean consumer product firms. Korean industries were selected for this study primarily because of the country's status as a newly industrialized nation. Specifically, as a result of Korea's relatively short industrial history (dating back merely four decades), the evolutionary progression of industries in the Korean economy has been characterized as rather dynamic (Weinberg 1997), which should provide a consummate setting for studying the possible causes for the success and the downfall of industries' incumbents. In addition, the assistance provided by the Korean Ministry of Commerce and Trade facilitated the access to Korean firms.

Data Collection

Each year, the Korean Ministry of Commerce and Trade publishes a complete listing of manufacturing firms (sorted by industry classification) in a directory titled *Yearbook of Korean Manufacturing Firms*. Using the 1995 edition as our principal source for selecting the target sample of incumbent firms, we initially chose 250 industries at random from this directory. For each of the 250 selected industries, the firm with the oldest founding date in each respective industry classification code was then picked to be on our target sample list. For each firm on this list, we identified the person actively involved in the firm's strategic planning at the senior management level as the target respondent, the rationale being that someone in this type of position is likely to possess a well-rounded knowledge of the firm's various functional areas (inclusive of marketing and new product development). This procedure was consistent with Huber and Power's (1985) guideline for single-informant data collection.

The questionnaires were sent out, accompanied by (1) a cover letter from the Ministry of Commerce and Trade soliciting cooperation and (2) a letter from the researchers plus general instructions for the survey. Two weeks after the mailing, follow-up telephone calls were made at two-week intervals for a two-month period, urging a completed return of the survey. Because of the persistent follow-up actions, 132 responses were returned in the end—a response rate of 52.8%. Among those, 5 were discarded (3 were incomplete and 2 were neither first nor early movers in their industry). Therefore, the usable sample size was 127. Industries included in the final sample cover a broad cross-section of consumer goods firms in the areas of cosmetics, pharmaceuticals, home electrical appliances, electronics, and automobiles, among many others.

Instrument

Questionnaire protocol served as the primary means for data collection. The questionnaire was developed primarily on the basis of instruments used in other studies (see the Measures section). An English language version was developed first and subjected to the procedures recommended by Brislin, Lonner, and Thorndike (1973) to secure conceptual equivalence. Each statement was translated into Korean and then back-translated twice by translators working independently. Any conflicts were discussed by the researchers and translators until agreement was reached.

Measures

Preemptive barriers. Although a vast number of barrier types have been suggested in the past, the following five represent the core constituents in the barrier topology as highlighted across studies by Porter (1980), Day (1984), and Karakaya and Stahl (1989): namely, cost advantages, capital requirements, customer switching costs, access to distribution channels, and proprietary assets. In our study, we examine the roles of these five barriers by first ascertaining the extent to which each of these barriers has been built into an industry through an adaptation of Karakaya and Stahl's (1989) approach—that is, What is the minimum level required for each of the following for an organization to operate in your industry?—accompanied by a five-point Likert scale, where "very high levels" and "very low levels" are the two extremes.

Number of new competitors. We assessed the extent of new entrants into the marketplace by asking the respondents for their estimate of the absolute number of new competitors that have entered their industry within the past 24 months. The choice of 24 months instead of 12 months should provide a more conservative test of each barrier's ability to discourage new market entry.

TABLE 1
Market Orientation Component Reliability Analysis

Market Orientation Component	Item-to-Total Correlation	Cronbach's Alpha
Customer Focus		.84
Customer commitment	.71	
Create customer value	.75	
Understand customer needs	.81	
Customer satisfaction objectives	.73	
Measure customer satisfaction	.62	
After-sales service	.80	
Competitor Focus		.75
Salespeople share competitor information.	.66	
Responds rapidly to competitors' actions.	.73	
Top managers discuss competitors' strategies.	.64	
Targets opportunities for competitive advantage.	.74	

TABLE 2
Technological Orientation Component Reliability Analysis

Technological Orientation Component	Item-to-Total Correlation	Cronbach's Alpha
New Product Development		.71
Use the latest technologies in new product development.	.78	
Our products are on the leading edge of the industry standard.	.57	
Systematic scanning for new technologies inside and outside the industry.	.54	
Commitment to R&D Program		.74
Significant portions of profit are reinvested in R&D.	.73	
Incentive system for R&D personnel for new patents.	.61	
Regular R&D meetings are attended by all top executives.	.59	

Innovativeness of new competition. Because understanding the efficacy of entry barriers against innovative new entries is one of the key objectives of this study, somewhat detailed information on the distribution of new entries is warranted. Therefore, further exploring firms' responses with respect to the number of new competitors, we asked the respondents to divide the number of new competitors into the following distinctions of innovativeness by adapting Tushman and Anderson's (1986) conceptualization: (a) backwards, (b) noninnovative, (c) incremental, (d) moderately radical, and (e) highly radical. Afterwards, we used the weighted-average index of new competitors' innovativeness to test for the moderating hypothesis.

Market orientation. We adopted Narver and Slater's (1990) scale capturing a firm's orientation on customer focus and competitor focus, which constitute a firm's market orientation. Cronbach's alpha coefficients were .84 for customer focus and .75 for competitor focus (Table 1), which correspond closely with those reported by Han, Kim, and Srivastava (1998) and Narver and Slater (1990). The extent of a firm's market orientation was then assessed by taking an average of customer and competitor focus measures (Narver and Slater 1990).

Technological orientation. We also address incumbents' disposition toward new technology in two areas: (1) the extent of their involvement with new technologies in new product development (Morita 1987; Van de Ven 1986) and (2) the level of their commitment to R&D (Szaknoyi 1986; Zaltman, Duncan, and Holbek 1973). The first is conceptually parallel to Gatignon and Xuereb's (1997) technological orientation scale, and Cronbach's alpha coefficient for this construct is .71; that for the R&D commitment construct is .74 (Table 2).

Scope of innovation. Tushman and Anderson (1986) define the full spectrum in the innovation scope with the following anchors: incremental innovation at one end, competence-destroying discontinuous innovation at the other end, and competence-enhancing discontinuous innovation in between. As the most radical type of innovation, the competence-destroying discontinuities are defined to be fundamentally distinct from the incumbent platform in terms of technology, skills, abilities, and knowledge base, thus making the prior platform obsolete. Moderately radical are the competence-enhancing discontinuities: As "order-of-magnitude" improvements on the incumbent platform, this class of innovations also makes the incumbent technology obsolete but nevertheless still uses much of the former skills, abilities, or knowledge base. Finally, incremental innovations are defined as minor improvements on the incumbent platform that do not displace the technology, skills, abilities, and knowledge base of the original platform.

For the firms' ambidexterity in their scope of innovation, we asked the respondents to indicate the choice that best describes their innovation-scope profile: (1) solely incremental, (2) incremental to competence-enhancing (moderately radical innovations that leverage some skill, abilities, or knowledge base of the current platform), (3) incremental to competence-destroying (highly radical innovations that do not employ any of the skills, abilities, and knowledge base of the current platform), (4) somewhere between the first two, (5) somewhere between the second and third.

Performance. Typically, the final yardstick used to address the robustness of incumbents' advantage has been either market share (e.g., Brown and Lattin 1994; Lambkin 1988; Robinson 1988) or profitability (e.g., Lambkin 1988; Shaanan 1997) measures. We follow suit in this study by examining incumbents' performance with two measures: market share and return on investment (ROI). Because incumbents' advantage is a concept relative to the industry average (Lieberman and Montgomery 1988), we asked the respondents for their firms' performance relative to the industry average; that is, compared with the industry average, the firm's ROI is (1) significantly lower, (2) slightly lower, (3) about the same, (4) slightly higher, or (5) significantly higher.

Model Specification

$$(1)\ \text{NEW\#C} = \beta_0 + \beta^{i}_{1}\,(\text{BARR}_i) + \beta^{i}_{2}\,(\text{BARR}_i \times \text{INNOV}) + \varepsilon^{i}_{1},\quad \text{for } i = 0 \text{ to } 5;$$

$$(2)\quad \text{TECHOR} = \beta^{i}_{3} + \beta^{i}_{4}\,(\text{MARKOR}) + \beta^{i}_{5}\,(\text{BARR}_i) + \varepsilon^{i}_{2},\quad \text{for } i = 0 \text{ to } 5;$$

$$(3)\qquad \text{AMBI} = \beta_6 + \beta_7\,(\text{TECHOR}) + \varepsilon_3;$$

and

$$(4)\qquad \text{PERF} = \beta_8 + \beta_9\,(\text{NEW\#C}) + \beta_{10}\,(\text{AMBI}) + \varepsilon_4,$$

where

NEW#C = number of new competitors,
INNOV = innovativeness of new competition,
BARR_0 = composite measure of five entry barriers,
BARR_1 = cost advantages,
BARR_2 = capital requirements,
BARR_3 = customer switching costs,
BARR_4 = access to distribution channels,
BARR_5 = proprietary assets,
MARKOR = market orientation,
TECHOR = technological orientation,
AMBI = scope of innovation, and
εs = disturbance terms for the respective equations.

The system of Equations 1–4 was estimated with a three-stage least squares analysis.

Results

Route 1: Preemptive Barriers and Market Entry Dynamics

To better comprehend the controversy underlying the efficacy of entry barriers, we have set out to explore the robustness of barriers' entry-deterring role by observing for the main effect and the possibility of a moderating effect simultaneously, which in tandem may contribute to the polemics. H_1 posits that all entry barriers have a main effect of delimiting the new competitive entry, and the result for the composite barrier measure ($\beta^{0}_{1} = -.49$, $p < .05$) fully supports H_1 (see Table 3). Further analysis reveals that H_1 is robust across all five barriers: cost advantages ($\beta^{1}_{1} = -.44$, $p < .05$), capital requirements ($\beta^{2}_{1} = -.30$, $p < .05$), switching costs ($\beta^{3}_{1} = -.41$, $p < .05$), distribution access ($\beta^{4}_{1} = -.35$, $p < .05$), and proprietary assets ($\beta^{5}_{1} = -.55$, $p < .05$). We also posited this direct impact as outlined in H_1 to be moderated by the innovativeness of new competition in the opposite direction (H_2). H_2 is marginally corroborated at the composite barrier level ($\beta^{0}_{2} = .10$, $p < .10$). A closer look into each barrier level reveals that H_2 is partially supported across the barrier types: That is, although the interaction parameter β^{i}_{2} is positive across all the five cases, it is robust only in the cases of capital requirements ($\beta^{2}_{2} = .14$, $p < .05$), switching costs ($\beta^{3}_{2} = .09$, $p < .05$), and distribution access ($\beta^{4}_{1} = .12$, $p < .05$).

Rounding out the latter link in Route 1 is the relationship between the number of new competitors and incumbents' performance (H_3). In line with expectations, the impact of the number of new competitors on the incumbents' ROI is robustly negative at the composite barrier level ($\beta_9 = -.19$, $p < .05$) and across all five barriers: cost advantages ($\beta_9 = -.05$, $p < .05$), capital requirements ($\beta_9 = -.42$, $p < .05$), switching costs ($\beta_9 = -.10$, $p < .05$), distribution access ($\beta_9 = -.12$, $p < .05$), and proprietary assets ($\beta_9 = -.23$, $p < .05$).

Route 2: Preemptive Barriers, Market Orientation, and Incumbents' Innovativeness

To further our investigation into the link between entry barriers and incumbents' performance, H_4–H_7 outline a second route of impact from the former to the latter. At the outset of this path, H_4 posits that all entry barriers have a negative influence on the incumbents' technological orientation. H_4 is marginally corroborated at the composite barrier level ($\beta^{0}_{5} = -.08$, $p < .10$). A breakdown at the individual barrier level shows that H_4 is fully supported in three of the five barrier cases: cost advantages ($\beta^{1}_{5} = -.09$, $p < .05$), capital requirements ($\beta^{2}_{5} = -.15$, $p < .05$), and proprietary assets ($\beta^{5}_{5} = -.04$,

TABLE 3
Three-Stage Least Squares Model Estimation Results on Barrier–Incumbent Profitability Framework

A: Composite of Entry Barriers

Dependent Variable	Composite of Entry Barriers	Innovative Competition Interaction	Number of New Competitors	Market Orientation	Technological Orientation	Innovation Scope
Number of new competitors	–.49**(H_1)	.10*(H_2)				
Technological orientation	–.08* (H_4)			.54**(H_5)		
Innovation scope					.67**(H_6)	
ROI			–.19*(H_3)			.86**(H_7)

B: Cost Advantages

Dependent Variable	Cost Advantages	Innovative Competition Interaction	Number of New Competitors	Market Orientation	Technological Orientation	Innovation Scope
Number of new competitors	–.44**(H_1)	n.s. (H_2)				
Technological orientation	–.09**(H_4)			.26**(H_5)		
Innovation scope					.51**(H_6)	
ROI			–.05**(H_3)			.16**(H_7)

C: Capital Requirements

Dependent Variable	Capaital Requirements	Innovative Competition Interaction	Number of New Competitors	Market Orientation	Technological Orientation	Innovation Scope
Number of new competitors	–.30**(H_1)	.14**(H_2)				
Technological orientation	–.15**(H_4)			.29**(H_5)		
Innovation scope					.50**(H_6)	
ROI			–.42**(H_3)			.47**(H_7)

D: Switching Costs

Dependent Variable	Switching Costs	Innovative Competition Interaction	Number of New Competitors	Market Orientation	Technological Orientation	Innovation Scope
Number of new competitors	–.41**(H_1)	.09**(H_2)				
Technological orientation	–.05* (H_4)			.32**(H_5)		
Innovation scope					.43**(H_6)	
ROI			–.10**(H_3)			.59**(H_7)

TABLE 3
Continued

E: Distribution Channel Access

Dependent Variable	Distribution Access	Innovative Competition Interaction	Number of New Competitors	Market Orientation	Technological Orientation	Innovation Scope
Number of new competitors	$-.35^{**}(H_1)$	$.12^{**}(H_2)$				
Technological orientation	n.s. (H_4)			$.28^{**}(H_5)$		
Innovation scope					$.48^{**}(H_6)$	
ROI			$-.12^{**}(H_3)$			$.62^{**}(H_7)$

F: Proprietary Assets

Dependent Variable	Proprietary Assets	Innovative Competition Interaction	Number of New Competitors	Market Orientation	Technological Orientation	Innovation Scope
Number of new competitors	$-.55^{**}(H_1)$	n.s. (H_2)				
Technological orientation	$-04^{**}(H_4)$			$.37^{**}(H_5)$		
Innovation scope					$.39^{**}(H_6)$	
ROI			$-.23^{**}(H_3)$			$.56^{**}(H_7)$

$^*p < .10$
$^{**}p < .05.$
n.s. = $p > .10$.

$p < .05$); H_4 is marginally supported for switching costs ($\beta^3_5 = -.05, p < .10$) and insignificant for distribution access.

In contrast, H_5 presupposes that a market-oriented culture in an incumbent firm can impart a positive influence on the firm's technological orientation. This claim is supported at the composite barrier level ($\beta^0_4 = .54, p < .05$) and across all barrier types: cost advantages ($\beta^1_4 = .26, p < .05$), capital requirements ($\beta^2_4 = .29, p < .05$), switching costs ($\beta^3_4 = .32, p < .05$), distribution access ($\beta^4_4 = .28, p < .05$), and proprietary assets ($\beta^5_4 = .37, p < .05$).

Further down the path, H_6 suggests that incumbents' level of technological orientation dictates the scope of their innovation portfolio. H_6 is significantly supported at the composite barrier level ($\beta^0_7 = .67, p < .05$) and across all five barrier types: cost advantages ($\beta^1_7 = .51, p < .05$), capital requirements ($\beta^2_7 = .50, p < .05$), switching costs ($\beta^3_7 = .43, p < .05$), distribution access ($\beta^4_7 = .48, p < .05$), and proprietary assets ($\beta^5_7 = .39, p < .05$). Finally, the incumbents' scope of innovation is then posited to affect their performance (H_7), which is corroborated at the composite barrier level ($\beta^0_{10} = .86, p < .05$) and throughout: cost advantages ($\beta^1_{10} = .16, p < .05$), capital requirements ($\beta^2_{10} = .47, p < .05$), switching costs ($\beta^3_{10} = .59, p < .05$), distribution access ($\beta^4_{10} = .62, p < .05$), and proprietary assets ($\beta^5_{10} = .56, p < .05$).

Discussion

The key objective of this study was to examine the nature of the impact of barrier building, which has been shrouded in controversy as to whether structural obstacles to entry represent a dull-, one-, or two-edged sword from the incumbents' viewpoint. We find overall empirical support that entry barriers of various classifications (cost advantages, capital requirements, customer switching costs, distribution channel access, and proprietary assets) offer some degree of deterrence against entry in accordance with their original intent. However, there are also conditions under which barrier building becomes quite ineffectual and even somewhat detrimental to incumbents' competitive outlook. The framework presented here is the first to observe—empirically or otherwise—the plurality of entry barriers' impact in a contingency setting, and to this end, a closer inspection into the obtained empirical results may shed some light on, and perhaps even reconcile, the seemingly discordant findings that have plagued the incumbency literature in the past.

First, on the fundamental issue of entry deterrence, we find that the main effect is highly robust across all five barriers studied here, which falls in line with the dominant school of thought in the incumbency literature (i.e., Bain 1956; Karakaya and Stahl 1989; Porter 1980). Nevertheless, these results do not signify that entry barriers are a panacea to all challenges to incumbents—a sentiment increasingly echoed by the likes of Robertson and Gatignon (1991) and Markides (1997). Corroborating their growing concerns, we find that these robust findings on the main effect still need some qualifications, as the interaction between entry barrier and new competitor's innovativeness is both positive and significant in three of the five cases (capital requirements, switching costs, and distribution access). In other words, these three barrier types fail to pose a significant hurdle against innovative entries, which is consistent with Shankar, Carpenter, and Krishnamurthi's (1998) observations on the commonality found across successful late entrants.

However, the other two entry barriers—cost advantages and proprietary assets—apparently managed to serve as effective deterrents against new challengers, innovative or otherwise. Evidently, these findings on cost advantages again reflect the paramount task for new innovative entrants to bring down their cost structures as a matter of survival in the marketplace—a case in point being Iridium in the telecommunications industry, which has failed in this respect and therefore resulted in bankruptcy. Also, the strong showing by proprietary assets (which includes patents, brand names, trademarks and so forth) in fending off both innovative and noninnovative challengers alike underscores the strategic importance of intangible assets. Aaker (1991) proclaims that proprietary assets are the most valuable sustainable competitive advantage for incumbents, largely because these assets are legally protected and therefore are not easily imitable. Ostensibly, the findings across the five barriers suggest that though Yip's (1982a) claim of barriers' total ineffectiveness appears to be overstated, many entry barriers are less than impervious in protecting incumbents.

Second, on the question of entry barriers' role as enablers versus inhibitors of incumbents' innovativeness, our findings lean toward the latter, though not uniformly across the five barrier types. Namely, cost advantages, capital requirements, proprietary assets, and, to some extent, switching costs appear on the side of inhibitors, whereas distribution access is partial to neither. In light of the strong showings by cost advantages and proprietary assets as all-around, effective entry deterrents, their negative effects on incumbents' innovativeness somewhat reinforce the theories of incumbents' arrogance from past success (Lieberman and Montgomery 1988) and complacency toward technological trends (Robertson and Gatignon 1991). Capital requirements, as inhibitors of innovativeness, seem to fall in line with the prior literature on escalating commitment (Tang 1988) as well as unwillingness to cannibalize (Chandy and Tellis 1998). With respect to customer switching costs, despite their marginal significance in inhibiting innovativeness, this type of barrier-premised incumbent inertia seems plausible, as is exemplified by the high-profile case of Apple Computer's overrelying on its user-friendly platform to drive the firm to the brink of bankruptcy during the late 1990s. Finally, our nonsignificant result for the distribution access on incumbents' innovativeness appears to capture the difficulty in monopolizing this strategic asset away from the competition, as Microsoft is finding out in its battle with Netscape in the Internet browser market (Wilke and Gruley 1998). To this end, distribution channel access as a barrier seems to afford the incumbents neither the luxury of complacency nor the protection to spur on greater innovativeness in their organizations.

Nonetheless, despite most entry barriers' general tendency to induce technological inertia in incumbents, the silver lining appears to be that a market-oriented culture can mitigate much of this undesirable inclination. The rationale is that market orientation—driven by customer and competitor focus—is likely to promote vigilance on all fronts aimed at a systematic organizational renewal and, in the process, sustain high levels of organizational innovativeness in incumbent firms. Not surprisingly (though not accounted for in the context of the incumbency–barrier framework), firms characterized by a strong, market-oriented corporate culture have been robustly associated with long-term, superior levels of firm performance in recent years (i.e., Deshpandé, Farley, and Webster 1993; Gatignon and Xuereb 1997; Han, Kim, and Srivastava 1998; Jaworski and Kohli 1993; Slater and Narver 1994). In this context, our findings therefore provide initial evidence that the inertia-combating effects of market-oriented culture may play a key differentiating role in dictating the longevity of incumbent organizations.

To summarize, we have explored barriers in the following roles: as (1) effectual versus ineffectual entry deterrents and (2) enablers versus inhibitors of incumbents' innovativeness. In the process, we have discovered that though barriers in general provide some protection against new entrants, the extent of protection varied widely against entrants of the innovative kind. Moreover, although the majority of barriers had a negative effect on incumbents' innovativeness, the relief appeared in the form of market orientation, which was a robust counteracting force against incumbent inertia. In conclusion, although our findings demonstrate the fragility of incumbent advantage, we also shed some light on and leave open the possibility of its sustainability.

Managerial Implications

The long-held precept of equating entry barriers with sustainable incumbent advantage has been met with some reservation over the years, yet how to go about reformulating the maxim remains somewhat unclear. In this context, our study has shown that several lessons can be learned from studying the dynamics associated with entry barriers. Incumbents must recognize the limits of barriers and not let down their guards: That is, although entry barriers may effectively deter me-too types of entries, most barriers studied here demonstrate that the Achilles' heel is the innovative entrants. Furthermore, the failure to recognize this shortcoming while overrelying on entry barriers can undermine incumbents' innovative position in the marketplace. To avoid such pitfalls, a total commitment to a long-term, innovation-cycle management is warranted from the incumbents' standpoint. Specifically, a deft balancing act of encompassing incremental, continuous, and discontinuous innovations is required over the innovation cycles: (1) by leveraging the current technological platform, incumbents can develop incremental innovations to create and sustain an installed customer base in the early stages of the cycle, and (2) the generated cash flow from Step 1 can be reinvested toward developing both continuous and discontinuous innovations in anticipation of preempting the inevitable innovative challenges at some point down the road.

In managing cycles of innovation, our findings suggest that a prudent application of entry barriers should facilitate the sustenance of incumbent advantage. That is, the process of barrier building entails significant financial and resource commitment by the incumbents. Under limited budget constraints, incumbent firms should select barriers that are more robust against varying levels of innovative threats, ceteris paribus. Our results show that cost advantages and proprietary assets are such barriers. According to the brand equity literature, proprietary assets appear to transcend the technological generations most readily (Aaker 1991). For example, IBM and Smith-Corona were both leaders in the yesteryear business technology (typewriters), but only the former had skills to manage innovation cycles successfully into today's business platform (mainframe computers). Apparently, IBM's strong brand equity facilitated the delimitation of innovative entries over the years—the most notable being Apple Computers in the personal computer segment (despite IBM's inferior platform at the time). Therefore, coordinating innovation-cycle management with barrier building can facilitate incumbents' maintenance of their positions of advantage.

Finally, the implementation of the aforementioned tasks—that is, successfully managing cycles of innovations along with coordinated barrier building—appears to be largely conditional on the incumbents' ability to institutionalize a market-oriented corporate culture throughout their organizations. Han, Kim, and Srivastava (1998) recently have demonstrated that market orientation is a key basis for corporate innovativeness, and our study goes a step further to show that strong levels of customer and competitor focus can even counter many of the negative effects arising from barrier building on the incumbents' innovative position. In line with Slater and Narver's (1994) recommendations, we posit that creating a market-oriented culture requires an organization-wide effort, and the commitment and direction should come from the top—because organizational culture may be the ultimate sustainable competitive advantage after all.

Limitations and Directions for Further Research

There are several key factors beyond the scope of this study that we leave for future investigation. First, our study has focused exclusively on consumer goods firms, which means that industrial goods manufacturers and service providers have not been included in our analysis. Through a set of two studies (Robinson 1988; Robinson and Fornell 1985), a case has been made for the need to explore the sources of incumbents' advantage in both the consumer and industrial settings; therefore, future studies should examine the external validity of our findings to the industrial-market setting. A similar logic applies to the service context.

Second, organizational characteristics, such as size and time in market, have been considered to affect incumbents' susceptibility to inertia due to factors such as "hardening of the arteries" and increased bureaucracy that typically accompany the organizational size and age (Lawler and Galbraith 1994; Tushman 1997). Additional research should involve investigating the effects of incumbents' organizational characteristics along the two routes of impact outlined in our study's framework for a more detailed strategic understanding of the barrier–incumbency relationship.

Finally, the empirical findings of this study are based on data from Korean industries. Although Korea supports a free-market system, there are factors idiosyncratic to the Korean economy, which may limit the generalizability of the findings somewhat. For example, Korean industries are often dominated by *chaebols* (conglomerates), which have a strong presence across multiple industries. Moreover, because firms within a *chaebol* network tend to have close business ties with one another, either an incumbent firm or a late entrant belonging to a *chaebol* group will have an added advantage in the marketplace over independent firms. Thus, future studies should corroborate and further the barrier–incumbency research in diverse economic contexts.

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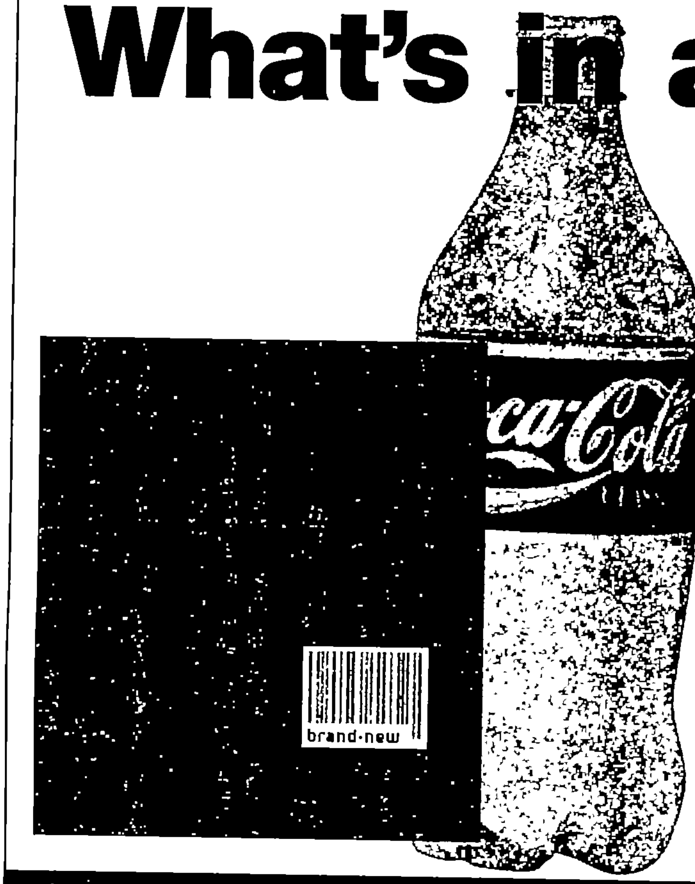

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P. Rajan Varadarajan, Satish Jayachandran, & J. Chris White

Strategic Interdependence in Organizations: Deconglomeration and Marketing Strategy

Although strategy exists at multiple levels in a firm (corporate, business, and functional), there is a dearth of research in marketing literature that focuses on the dependency among strategy at different levels. The authors address this issue by examining the relationship between deconglomeration and marketing strategy. Deconglomeration refers to the divestiture behavior of a conglomerate firm and the transformation of its business portfolio from one that is largely composed of several unrelated businesses to one composed of fewer and related businesses. Drawing on multiple theoretical perspectives, the authors propose a conceptual model delineating the environmental and organizational drivers of deconglomeration and its outcomes for marketing. The authors suggest that after deconglomeration, (1) a firm can be expected to be more competitor and customer oriented, (2) multimarket contact with competing firms and seller concentration will increase, (3) businesses retained by the firm will be more innovative and place greater emphasis on advertising compared with sales promotion, and (4) the firm's culture may become more externally oriented. Furthermore, the locus of decision making for marketing strategy may shift more toward senior management levels. In summary, changes in a firm's corporate strategy could lead to significant changes in the marketing strategy of its business units.

In a recent commentary advancing an agenda for increasing marketing knowledge use, Deshpandé (1999) stresses the need to break free from the shackles of functional silos in examining business problems and advocates research that is cross-disciplinary, cross-cultural, cross-functional, and customer-centric in focus. In addition to the four Cs proposed by Deshpandé, a fifth C that merits consideration, particularly in the realm of strategy, is research characterized by a multilevel or cross-level focus. Strategy exists at multiple levels in an organization—corporate, business, and functional. *Corporate strategy* specifies the businesses in which a firm chooses to compete. *Business strategy* specifies how different businesses in the firm's portfolio will compete in the marketplace. *Marketing strategy* refers to the marketing activities and decisions related to generating and sustaining competitive advantage for the business (Day, Weitz, and Wensley 1990). Although strategy exists at multiple levels, the interdependencies among strategy at different levels remains relatively unexplored. Yet, as the PepsiCo example described next suggests, marketing strategies pursued by businesses often are influenced by changes in corporate strategy that manifest themselves as changes in the firm's portfolio of businesses.

In 1996, PepsiCo divested its restaurant businesses (Pizza Hut, KFC, and Taco Bell) to focus on beverages and snack foods. Following the divestiture, PepsiCo undertook a major reorganization activity it branded as the "Power of One." The Power of One strategy encompasses efforts by PepsiCo to promote beverages and salty snack products together. For example, retail stores are encouraged to display these products side by side. Furthermore, in negotiating for shelf space from supermarkets, PepsiCo promotes the combined profit potential of its range of products. Although the idea of promoting beverages and salty snacks together is not new, after PepsiCo divested the restaurant business, this strategy received the attention of top management and became the company's strategic focus (Hays 1999).

Changes in corporate strategy can derail long-pursued and often successful marketing strategies while affording opportunities for new ones. The potential impact of corporate strategy on marketing strategy makes it imperative that marketing researchers and managers understand the contours of the change and its effect on marketing. The intended contribution of this article is the focus it brings to research on the cross-level dependency of marketing strategy and the detailing of a research agenda on such issues. Specifically, we elucidate the influence of corporate strategy on marketing strategy by examining the drivers of deconglomeration and its outcomes for marketing. *Deconglomeration* refers to the divestiture behavior of a conglomerate firm and the transformation of its business portfolio from one composed of several largely unrelated businesses to one composed of relatively fewer and interrelated busi-

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nesses.[1] It constitutes a corporate-level strategy decision to retain in the firm's portfolio only those businesses that, in the assessment of the top management of the firm, have the potential to leverage the firm's core competencies to emerge as major players in a global marketplace. Deconglomeration has been termed "a major evolutionary change for the American corporation" (Markides 1995, p. 8). In recent years, deconglomeration has been reshaping the landscape of corporate America by restructuring the business portfolios of conglomerate diversified firms from unrelated diversified to related diversified or focused (see Markides 1995). Case in point is the Sears Roebuck Company, which has retreated from a conglomerate strategy characterized in the business press as a one-stop shop for everything from socks to stocks. Subsequent to the divestiture of its Allstate insurance, Coldwell Banker real estate, Dean Witter brokerage, and Discover credit card businesses, Sears is currently focusing on its retailing business.[2]

In conglomerate growth through diversification, firms used the profits generated by their present businesses to finance entry into new, often unrelated businesses. Such diversification was justified by financial synergy considerations. The corporate headquarters, in this case, functioned as an internal capital market allocating funds on the basis of the relative market attractiveness of individual businesses and their relative competitive positions. However, in recent years, the role of the corporate headquarters seems to have changed from that of an arbiter of financial capital to one of a trustee of the firm's valuable resources, such as its brand, customer, and channel equity (i.e., market-based assets; see Srivastava, Sherwani, and Fahey 1998); human resources portfolio; and competencies portfolio. This change has been associated with the reorganization of businesses around a firm's core competencies and the divestiture of businesses that cannot leverage these competencies. A significant portion of the resources freed up by these divestitures tends to be redeployed toward enhancing the competitive position of the businesses retained through pursuit of market penetration (e.g., acquiring direct competitors, increasing market share), market development (e.g., entering new geographic markets), and product development (e.g., introducing new products in the markets presently served) strategies.

In essence, unlike the era of conglomeration that was guided by a corporate philosophy of growing by diversifying, the era of deconglomeration is being shaped by a corporate philosophy of growing by divesting. Although growing by divesting may sound like an oxymoron, it can be a viable road to enhancing the long-term performance of conglomerate firms through judicious business deletion and resource reallocation decisions. In summary, the guiding philosophy here is one of pursuing growth by focusing on the firm's core competencies instead of the previous philosophy of focusing on financial synergies. Consequently, we argue that the marketing behavior of the businesses constituting the firm's portfolio is likely to change. In an attempt to provide theoretical and practical insights into this issue to marketing academicians and managers, in the sections that follow we

- Propose a conceptual model delineating the antecedents and marketing-related outcomes of deconglomeration,
- Present research propositions that explicate the relationships delineated in the proposed model, and
- Propose an agenda for further research in this area.

Drivers and Outcomes of Deconglomeration

A conceptual model delineating the relationship between deconglomeration intensity and its drivers and outcomes is presented in Figure 1. Here, the focal construct, deconglomeration intensity, is modeled as a function of five sets of drivers: (1) macroenvironmental drivers, (2) corporate governance drivers, (3) behavior of referent firms, (4) market power, and (5) strategic variety. Deconglomeration intensity is conceptualized as the extent to which a conglomerate firm has divested businesses from its portfolio over a defined period—that is, the proportion of a firm's sales at time t accounted for by businesses divested during the period t to

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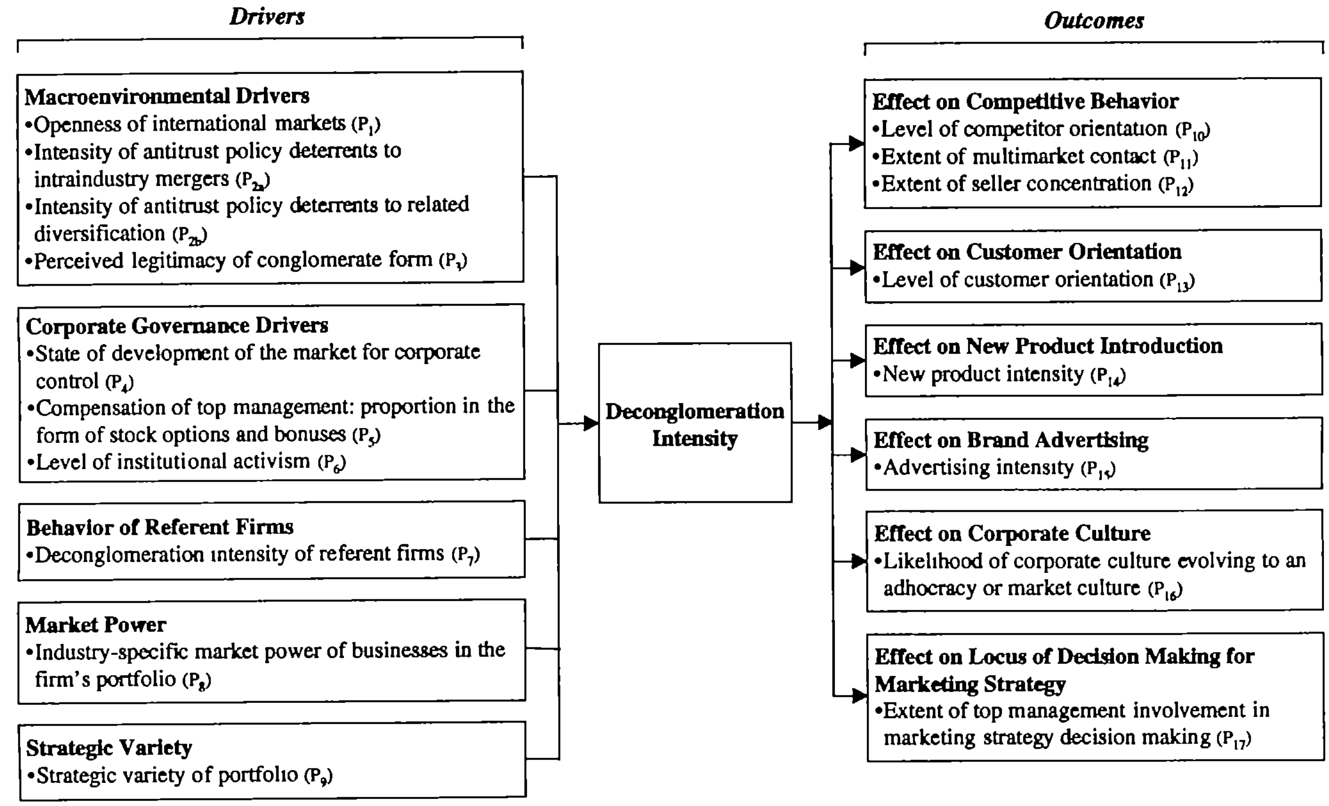
[1] Central to a firm's diversification strategy are decisions related to (1) the direction of diversification (e.g., related versus unrelated/conglomerate diversification), (2) the degree of diversification (e.g., high, moderate, and low levels of related or unrelated diversification) and (3) the mode of diversification (e.g., internal development, acquisition, merger, joint venture). As Markides (1995) notes, a strategy of related diversification in which the various businesses are structured around the firm's core competencies is expected to pay off through synergistic economies. In a strategy of unrelated or conglomerate diversification, although the various businesses may have no operational synergies, the firm is expected to benefit through financial economies.

[2] Although in some cases it is conceivable that a strategy of deconglomeration (guided by an objective assessment of the firm's core competencies) will lead to a firm returning to its roots, it is also possible to envision deconglomeration leading to a firm divesting businesses that composed its portfolio before conglomeration. Cases in point are Corning Incorporated and Dial Corporation. Founded in 1851, Corning was well known for more than a century for shaping glass into household consumer products such as Pyrex and Corning Ware brand kitchenware. As recently as 1995, it was a conglomerate whose portfolio was composed of five lines of business: consumer products (13%), health care services (39%), telecommunications (22%), advanced materials (16%), and information display (10%). Following the divestiture of its health care division and consumer products division, the refocused and restructured Corning is still a maker of glass-based products, but of a very different kind. The company spins out glass in the form of more than 30 million kilometers of optical fiber annually, and the telecommunications division accounts for approximately 70% of the firm's annual revenues (Creswell 2000).

Over a period of time, the Greyhound Company, originally an intercity bus service firm, evolved into a conglomerate by diversifying into several businesses, including household cleanser products (e.g., detergents) and personal care toiletry products (e.g., bath soaps, deodorants), processed meat foods, and food catering service. The firm that emerged in the aftermath of deconglomeration is no longer in the intercity bus service business. It is a consumer products company currently operating under the name Dial Corporation. Dial's principal lines of business after deconglomeration are personal care products (Dial, Breck, and Tone brands), laundry products (Purex, Borateem, and Sta-Flo brands), specialty body care products (Sarah Michaels and Nature's Accents brands), air fresheners (Renuzit brand), and canned meats (Armour brand).

FIGURE 1
Drivers and Outcomes of Deconglomeration Intensity: A Conceptual Model


Drivers
Macroenvironmental Drivers
•Openness of international markets (P_1)
•Intensity of antitrust policy deterrents to intraindustry mergers (P_{2a})
•Intensity of antitrust policy deterrents to related diversification (P_{2b})
•Perceived legitimacy of conglomerate form (P_3)
Corporate Governance Drivers
•State of development of the market for corporate control (P_4)
•Compensation of top management: proportion in the form of stock options and bonuses (P_5)
•Level of institutional activism (P_6)
Behavior of Referent Firms
•Deconglomeration intensity of referent firms (P_7)
Market Power
•Industry-specific market power of businesses in the firm's portfolio (P_8)
Strategic Variety
•Strategic variety of portfolio (P_9)
Deconglomeration Intensity
Outcomes
Effect on Competitive Behavior
•Level of competitor orientation (P_{10})
•Extent of multimarket contact (P_{11})
•Extent of seller concentration (P_{12})
Effect on Customer Orientation
•Level of customer orientation (P_{13})
Effect on New Product Introduction
•New product intensity (P_{14})
Effect on Brand Advertising
•Advertising intensity (P_{15})
Effect on Corporate Culture
•Likelihood of corporate culture evolving to an adhocracy or market culture (P_{16})
Effect on Locus of Decision Making for Marketing Strategy
•Extent of top management involvement in marketing strategy decision making (P_{17})

$t + x$.[3] As regards the outcomes of deconglomeration, our focus here is limited to those that are germane to marketing. Principal among these are (1) competitive behavior, (2) customer orientation, (3) new product introduction, (4) brand advertising, (5) corporate culture, and (6) locus of decision making for marketing strategy. We discuss the model in detail in the next two sections.

Drivers of Deconglomeration

Macroenvironmental Drivers

In recent years, several macroenvironmental factors, including increasing international market openness, changes in antitrust policies, and a decline in the perceived legitimacy of conglomerate structure, have influenced the divestiture behavior of conglomerate firms.

International market openness. Before the 1990s, many international markets were characterized by high barriers to entry, often forcing firms to pursue growth by diversifying into new businesses within their home countries. Over the past decade, however, international markets have become considerably more open. In the more liberal international investment environment, firms now have a real choice between international market diversification (extending the geographic scope of their present businesses) and intranational business diversification (entering into new businesses in their presently served markets).

The theory of the multinational firm suggests that firms choose to become multinationals because, other conditions remaining the same, a firm that pursues international market diversification can be expected to outperform a firm that pursues intranational business diversification for the following reasons:

- Multinational corporations (MNCs), compared with firms pursuing intranational business diversification, have greater ability to exploit three sources of competitive advantage: differences in factor costs, scale economies, and scope. These sources of competitive advantage are open to all firms, but international market diversification provides MNCs with opportunities that are greater in degrees (Ghoshal 1987).
- The exposure of MNCs to highly diverse markets provides them with broader learning opportunities in comparison with purely domestic firms. This may enable MNCs to outperform their purely domestic rivals (Ghoshal 1987).
- Although extracting additional rents from the stock of skills and resources currently possessed by the firm is the impetus

---

[3] We wish to point out certain limitations in the conceptualization of deconglomeration intensity. Nuances such as harvesting and liquidation and partial divestment are not isolated by this conceptualization (see Hopkins 1991). Furthermore, it is conceivable that a conglomerate in dire financial straits might resort to divesting one or more of its core businesses rather than engaging in a deliberate strategy of deconglomeration and divestiture of noncore businesses. In such cases, the proposed conceptualization would capture divestment intensity (see Hoskisson, Johnson, and Moesel 1994) rather than deconglomeration intensity. Despite these limitations, to the extent that such behavior is rare, the proposed conceptualization is likely to provide a fairly robust measure of deconglomeration intensity.

for entering new international markets, diversification into new businesses would entail either the acquisition or the internal development of new skills and resources. All else being equal, the latter approach is associated with greater outcome uncertainty.

Deconglomeration could therefore be a consequence of the opening up of many international markets—that is, an action by conglomerates to free up resources to pursue growth through more profitable international market diversification in core businesses in place of less profitable intranational business diversification.

> P_1: The greater the openness of international markets, the greater is the deconglomeration intensity.

Antitrust policies. The antitrust policies of the 1960s and 1970s were dominated by a focus on preventing the emergence of concentrated market structures, presumably because of the strong influence of the structure–conduct–performance (SCP) model in industrial organization economics. The SCP model (Bain 1956) views industry structure as the determinant of firm behavior and performance. A concentrated market structure, according to this model, facilitates oligopolistic coordination among firms, resulting in lower output, higher prices, and higher rates of return. To prevent the emergence of concentrated market structures, antitrust policy strongly discouraged intraindustry mergers and, to a degree, diversification into closely related businesses through mergers and acquisitions. Consequently, firms resorted to unrelated diversification in their quests for growth, which led to the emergence of conglomerates (Lichtenberg 1990).

Antitrust policy, however, changed radically in the 1980s. The Reagan administration's faith in the power of a free-market economy to promote higher economic performance led to less stringent enforcement of antitrust statutes and changes in antitrust policy (Schleifer and Vishny 1991). This reduced the institutional constraints placed on firms from growing in their present and/or related lines of businesses. These changes could have been influenced by the efficiency model of industrial organization economics (Demsetz 1973), which suggests that the relationship between concentration and profitability is due to efficiency differences between firms rather than the result of collusion and coordination as is postulated in the SCP model. Less stringent enforcement of and changes in antitrust statutes were conducive to intraindustry mergers, hostile takeovers, and leveraged buyouts. Consequently, there seems to have been a sharp increase in intraindustry mergers during the 1980s (see Schleifer and Vishny 1991). Therefore, it is conceivable that deconglomeration is a consequence of (1) the opportunities that became available to conglomerates to pursue growth in their core businesses through actions such as intraindustry acquisitions and diversification into related businesses and (2) the need to generate resources for such growth. Therefore,

> P_2: The lower the intensity of antitrust policy deterrents to (a) intraindustry mergers and acquisitions and (b) diversification into related businesses, the greater is the deconglomeration intensity.

Legitimacy of the conglomerate organizational form. According to population (or organizational) ecology theory, firms exist primarily because of stakeholders' demands for reliability and accountability (Hannan and Freeman 1984). *Reliability*, to the shareholders of a firm, is the firm's ability to provide superior returns consistently, compared with the returns that shareholders can realize by pursuing alternative investment opportunities. *Accountability* refers to the ability of a firm to explain to its shareholders that resources have been used appropriately and that managerial actions taken are in the best interests of shareholders. Reliability and accountability provide an organizational form with legitimacy in the eyes of its stakeholders. Organizations must maintain reliability and accountability over long periods of time. This necessitates the development of routines and results in the institutionalization of processes. Institutionalization of processes can, however, lead to inertia, the inability to change as the environment demands. For new organizational forms to emerge, substantial stress needs to be created by a change in the resource space (or niche) that causes a particular organizational form to lose legitimacy on account of diminished reliability and accountability.

In recent years, conglomerate diversified firms have experienced a loss of legitimacy as a superior organizational form from the shareholders' point of view, because their reliability and accountability have become suspect. With few exceptions, conglomerate diversified firms have failed to provide reliable returns to shareholders compared with what shareholders could earn from investing in other organizational forms. Furthermore, the management of conglomerates may have failed to provide rational explanations for the advantage of the unrelated, diversified nature of its business portfolio. The gap between the desired and provided reliability and accountability could have prompted investors to move their capital to organizational forms perceived to be more reliable and accountable, such as related, diversified firms. Indeed, this is reflected in the phenomenon commonly referred to as "conglomerate discount" (i.e., the stock market imposes a discount on the share prices of conglomerate diversified firms; Heuskel 1996). The stress from this change in the niche may lead firms to adapt through deconglomeration. Therefore,

> P_3: The lower the perceived legitimacy of the conglomerate diversified firm as an organizational form, the greater is the deconglomeration intensity.

Corporate Governance Drivers

The separation of ownership and management of firms, coupled with wide diffusion of ownership among a large number of shareholders, often diminishes the power of shareholders (principals) and provides managers (agents) considerable discretion over policy decisions. Agency theory explores these issues by analyzing situations that lead to such problems and drawing up contracts to mitigate them (for a review, see Bergen, Dutta, and Walker 1992; Jensen and Meckling 1976). Agency theory explains conglomeration as a consequence of differences in the risk preferences between managers and shareholders and an inability to control the consequent self-serving managerial behavior:

- Managers may be inclined to reduce their employment risk by diversifying because higher levels of unrelated diversification are likely to reduce variance in cash flows and the risk of bankruptcy (Amihud and Lev 1981). However, excessive unrelated diversification may hurt the performance of the firm, because managers may not be able to control all the subsidiaries of the diversified firm appropriately and may not focus enough on innovation (Hoskisson and Hitt 1990). This creates a conflict of interest between managers and shareholders.
- Shareholders are constrained in their ability to control opportunistic behavior by managers because of the difficulty and/or expense of acquiring information. The board of directors, which usually has enough information on managerial behavior, is expected to control opportunistic behavior by managers (Fama and Jensen 1983). However, more often than not, management controls the selection of board members and the functioning of the board. Consequently, the power of the board to control opportunistic managerial behavior may be limited.
- It is possible to control managerial behavior through appropriate compensation schemes. Traditionally, however, the bulk of top management's compensation was tied to the size of the firm Managerial self-interest, under the influence of such compensation plans, may have led to diversification through acquisition in order to increase the asset and revenue base of the company (see Fama and Jensen 1983).

During the 1980s, three mechanisms emerged to control or discipline managers who may be inclined to pursue corporate strategies that might be undesirable from the perspective of shareholders—the market for corporate control, managerial compensation linked to stock performance, and institutional activism in corporate governance. We discuss the impact of these three mechanisms on deconglomeration next.

The market for corporate control. The market for corporate control has emerged to discipline ineffective managers through takeover of firms (Fama and Jensen 1983). Conglomerates performing poorly are particularly strong candidates for external takeover. There are two ways in which the market for corporate control can lead to deconglomeration. First, after a takeover, the new owners often replace the managers. Therefore, high levels of unrelated diversification, originally sought by managers to reduce their employment risk, may increase employment risk in an active market for corporate control. Consequently, managers may pay heed to the threat of hostile takeovers and run the firm more efficiently (Walsh and Seward 1990). This may lead to a reduction in inefficient forms of diversification (from the shareholders' perspective) and consequently deconglomeration. Second, extremely high levels of debt are often used to finance takeovers. Such high levels of debt force new owners/managers to divest businesses selectively from the firm's portfolio to reduce the debt. The most logical candidates for divestiture are strategic business units (SBUs) with the least potential to leverage the firm's core competencies.

The extent to which the market for corporate control is likely to affect deconglomeration intensity will depend on how well developed the market for corporate control is in the country in which a firm is headquartered and its securities are primarily traded. Consider, for example, the differences in the stage of development of the market for corporate control alluded to in a Boston Consulting Group (Lewis and Peck 1991) study:

> Financial markets and corporate ownership patterns have differed between the U.S./U.K. and German systems. .: weaker companies are not as heavily discounted in the (German) stock market as in the U.S. As a result, Germany hasn't had a well-developed market for corporate control.... Takeovers, radical restructurings, and sales of low-performing businesses—all familiar in the U.S and the U.K.—are rare in Germany and on most of the continent.

Therefore,

> P_4: The more developed the market for corporate control, the greater is the deconglomeration intensity.

Managerial compensation. As noted previously, the bulk of top management's compensation traditionally has been tied to the size of the firm. This may have led to diversification through acquisitions intended to increase the asset and revenue base of the company (Fama and Jensen 1983). More recently, however, there has been a shift toward compensating top managers through stock options. When a large proportion of top managers' compensation is in the form of stock options, it ties their income closely to stock performance. This motivates managers to initiate actions conducive to increasing the market value of the firm. Therefore, the top management of a firm may divest businesses that adversely affect the firm's share price and, in turn, its own compensation (Hoskisson and Hitt 1994). Therefore,

> P_5: The larger the proportion of top managers' total compensation that is in the form of stock options, the greater is the deconglomeration intensity.

Institutional activism in corporate governance. During the past few decades, the structure of ownership of U.S. corporations has changed drastically. Institutional investors such as mutual funds and pension funds have emerged as major shareholders that own more than half the equity of public companies. Since the mid-1980s, institutional investors have become increasingly assertive in their quest to improve control mechanisms and curb managers' pursuit of self-serving strategies, such as high levels of unrelated diversification, that are likely to have an adverse impact on the market value of the firm (David 1996). This, in turn, may have led to deconglomeration. Therefore,

> P_6: The greater the level of institutional activism in the governance of conglomerate firms, the greater is the deconglomeration intensity.

Behavior of Referent Firms

Institutional theory suggests that competitive behavior of firms is based on a collective cognitive framework that exists within firms (Porac and Rosa 1996). Firms compare their activities with those of their rivals and peers to enhance their understanding of strategies. When a firm takes an action, such as deconglomeration, other firms analyze the action and decide on its appropriateness. If the action were to be taken by firms that are leaders, it gets deeply embedded in the managerial cognitive construction of the competitive space and gains legitimacy. Legitimacy makes a strategic action less risky, from a political perspective, because it may be easier to justify the failure of actions that have a high degree of legitimacy. This furthers the tendency of other firms to copy the action (DiMaggio and Powell 1983).

To the extent that deconglomeration is perceived as conducive to superior firm performance or is undertaken by leading firms, other firms may copy this action (i.e., engage in mimetic action). Deconglomeration as a strategy has received a fair degree of acclaim from the popular press and investor support on Wall Street. This confers further legitimacy on deconglomeration as an effective strategy. Therefore, managers of conglomerate firms may, by mimetic action, engage in similar divestiture behavior. Thus, the enshrining of deconglomeration as a successful strategy in managerial cognitive constructions may be a reason for the divestiture behavior of conglomerate firms. Therefore,

> P_7: The greater the deconglomeration intensity of referent firms, the greater is the deconglomeration intensity of the focal firm.

Market Power

Market power is the ability of a market participant or group of participants to influence price, quality, and the nature of the product in the marketplace (Shepherd 1970). In the past, generalized market power, determined by the overall size of the firm, was considered critical to overall firm performance. This belief could have acted as a driver of conglomeration, because firms may have accumulated businesses with the objective of increasing firm size. However, research evidence shows that, more than generalized market power, it is industry-specific market power that influences overall firm performance (Montgomery 1985). Furthermore, Montgomery finds that, on average, highly diversified firms do not have strong market positions in the product-markets in which they compete.[4] Business divestitures by conglomerates can therefore be explained as a strategic behavior intended to free up resources in order to enhance the industry-specific market power of businesses in their portfolio. Therefore,

> P_8: The lower the industry-specific market power of businesses in a conglomerate's portfolio, the greater is the deconglomeration intensity.

Strategic Variety

Strategic variety refers to differences in the strategic characteristics of the businesses in a firm's portfolio. It is a function of the unrelatedness of the businesses in the firm's portfolio and the diversity of the markets in which they operate. Excessive strategic variety of the businesses in a conglomerate's portfolio may motivate deconglomeration.

The resource-based theory of the firm suggests that the sustainability of the competitive advantage of the various businesses in a firm's portfolio is a function of the core competencies of the firm (Barney 1991; Hunt and Morgan 1995; Prahalad and Hamel 1990). A firm's core competencies are based on the collective learning in the organization and built around resources that are valuable, rare, difficult to imitate, and not easily substitutable (Barney 1991). As noted by Prahalad and Hamel (1990, p. 81): "The real sources of advantage are to be found in management's ability to consolidate corporate wide technologies and production skills into competencies that empower individual businesses to adapt quickly to changing opportunities."

A firm's ability to consolidate and leverage competencies has implications for deconglomeration. Although a firm's core competencies can be leveraged for entry into related businesses, it may not be possible to leverage these resources for success in vastly unrelated businesses. Moreover, it may be difficult to generate and nurture firm-specific resources required for success in vastly different businesses. This follows from the likelihood that firm-specific resources are often socially complex (spread over many people or groups), causally ambiguous, and deeply embedded in organizational routines and processes (Barney 1991). The cognitive limitations of a firm's management may often act as a constraint on its attempts to learn, sustain, and leverage multiple firm-specific resources necessary for success in businesses with substantial strategic variety.

Coping with strategic variety becomes an even greater cognitive burden on management when the risks and complexities of multiple international markets are added. Addressing this burden, Prahalad and Bettis (1986, p. 494) state, "Divesting businesses to get more focus to the portfolio results from an implicit recognition that the demands on top management of strategic variety can be significant." Therefore, one of the reasons underlying deconglomeration may be the limitation of management's cognitive capability to handle the strategic variety and complexity that operating in many international markets with a diversified portfolio of unrelated businesses entails. Therefore,

> P_9: The greater the strategic variety of a conglomerate firm's business portfolio, the greater is the deconglomeration intensity.

Outcomes for Marketing

Deconglomeration influences a firm's strategic imperatives, resource position, control systems, and market environment as follows:

1. Although the conglomerate firm relies on financial synergy–driven unrelated diversification as a basis for growth, after deconglomeration, in light of the fewer related businesses in its portfolio, the firm's growth depends on developing retained businesses through the pursuit of appropriate strategies.
2. Deconglomeration frees up resources—financial resources as well as top management's time—that previously were spent coordinating and controlling SBUs with very different knowledge bases.

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[4] Although empirical evidence suggests that, on average, highly diversified firms do not have strong market positions in the product-markets in which they compete, there are nevertheless exceptions. For example, over the years, General Electric has divested several businesses that had poor prospects for achieving the company's stated market share goal of being "number one or number two" in the respective industries and has redeployed the freed up assets in businesses that show greater promise of becoming dominant businesses within their respective industries.

3. The strategic variety of the conglomerate firm often limits senior management's ability to control subsidiary operation through financial controls. After deconglomeration, the greater strategic focus of the firm enables senior management to employ strategic controls to guide managerial behavior.
4. Deconglomeration is likely to lead to more concentrated market structures in the markets in which the firm continues to operate. Furthermore, deconglomeration may also increase the relative market overlap of a firm with its rivals.

These changes can conceivably influence the firm's marketing strategy and processes. In the sections that follow, we examine in detail how one or more of these changes associated with deconglomeration influence aspects of firm behavior that are particularly relevant to marketing strategy researchers and marketing managers.

Effect on Competitive Behavior

In this section, we focus on the likely effect of deconglomeration on three organizational and market characteristics that have been extensively explored in marketing and strategy literature as factors that shape the competitive behavior of firms: competitor orientation, multimarket contact, and seller concentration.

Competitor orientation. Competitor orientation refers to the extent to which firms focus on learning about the actions of their rivals and reflects their propensity to respond to competitors (Narver and Slater 1990). The effectiveness of a firm's responses to the actions initiated by rivals critically influences its competitive advantage (Dickson 1992). Therefore, focusing on and responding to the actions initiated by competitors are critical for the long-term vitality of the firm.

The leaner business portfolio of a firm after deconglomeration is likely to provide top management with greater opportunities to focus on the market behavior of competitors. In effect, the greater availability of top management's time as a resource is likely to enhance the ability of the firm to focus on the market behavior of competing firms. Before deconglomeration, top management's attention would more likely have been focused on monitoring and coordinating the operations of different business units characterized by a high degree of strategic variety. Greater attention from top management to competitive activities can be expected to lead to greater competitor orientation for firms (Kohli and Jaworski 1990). Furthermore, the overall growth of a firm after deconglomeration is dependent on fewer businesses. Given the heightened importance of the growth of the retained businesses to the overall growth of the firm, the motivation of firms to monitor rivals is likely to be greater. Some of the resources made available by divestitures are likely to be deployed toward scanning the market and gleaning insights into competitors' behavior. This would help raise awareness of competitors' actions. In summary, after deconglomeration, the competitor orientation of the businesses retained by the firm is likely to increase because of (1) greater top management attention and (2) redeployment of resources toward market scanning.

> P_{10}: The greater the deconglomeration intensity, the greater is the competitor orientation of the businesses retained by the firm.

Market overlap. Multimarket contact, a measure of market overlap, is defined as the number of markets in which the focal firm competes with its rivals as a percentage of its total number of markets. Research in the area of multimarket competition suggests that when the same firms compete against each other in many markets, the intensity of rivalry between them may decrease (Gimeno and Woo 1996; Jayachandran, Gimeno, and Varadarajan 1999). Meeting in multiple markets may increase firms' ability to deter one another from aggressive actions, because an action initiated by a firm in one market may provoke retaliatory actions by rivals in many markets. Therefore, a higher proportion of revenues would be at risk in the event of competitive retaliation under the multimarket context compared with the single-market context. The possibility that more revenue will be at risk may act as a constraining force and prevent firms from engaging rivals in intense competition (Edwards 1955).

The expectation that after deconglomeration the relative market overlap of a firm with competitors will increase is based on the premise that it is unlikely that any two firms in an industry would pursue similar patterns of product-market diversification over a period of time. In other words, it is unlikely that conglomerate firms would have business portfolios with many competing businesses.[5] Therefore, the market overlap between conglomerate diversified firms, as a percentage of their total markets, may not be high. After deconglomeration, however, firms will see an increase in the percentage of market overlap with rivals. This overlap may increase further when firms redeploy resources freed up by divestitures into market expansion in the retained businesses in domestic and international markets.

> P_{11}: The greater the deconglomeration intensity, the greater is the multimarket contact of the firm with competing firms.

Seller concentration. Seller concentration refers to the oligopolistic nature of a market and is an important predictor of competitive behavior. Increased seller concentration, according to the SCP perspective, is likely to provide firms with greater opportunities for tacit collusion, resulting in reduced emphasis on price competition and higher prices. Research evidence shows that businesses divested by conglomerates tend to be acquired by firms in closely related businesses or firms in the same industry. For example, studies show that

- In divestitures that followed acquisition, more than 70% of the assets acquired in hostile takeovers ended up being managed by firms in the same line of business as those assets.

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[5] Consider, for example, the patterns of product-market diversification pursued during the 1960s, 1970s, and 1980s by Coca-Cola Inc. (Columbia Pictures entertainment, Maryland Club brand beverages, California Taylor brand wine beverages, Minute Maid brand fruit-based beverages, plastic cutlery business, pasta business, and desalination equipment business) and PepsiCo (Wilson Sporting Goods; North Atlantic Van Lines; Frito-Lay snack foods; and Pizza Hut, KFC, and Taco Bell chains of fast-food restaurants).

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- Within three years following leveraged buyouts, approximately 50% of the assets were sold to buyers in the same industry (see Schleifer and Vishny 1991).

Furthermore, as noted previously, after deconglomeration, a firm can be expected to redeploy some of the freed up resources toward acquisition of direct and/or peripheral competitors in the businesses in which the firm chooses to remain. Consequently, deconglomeration can be expected to lead to changes in the market structure of the industries from which a conglomerate exits, as well as the ones in which it chooses to remain. The net effect is that the industries from which a conglomerate exits and the ones in which it chooses to remain are likely to become more concentrated than before.

> P_{12}: The greater the deconglomeration intensity, the greater is the seller concentration in the industries served by the businesses retained.

In summary, as a result of the influence of deconglomeration on competitor orientation, multimarket contact, and seller concentration, after deconglomeration, the competitive behavior of firms is likely to change. The specific nature of the change would depend on the relative influence of deconglomeration on each of these factors and is an empirical issue.

Effect on Customer Orientation

After deconglomeration, the relationship of a firm with customers will be centered on fewer businesses. Moreover, as a result of redeployment of resources freed up by divestitures to enhance the competitive position of the businesses that are retained, it can be expected that the retained businesses are likely to serve a much larger and more global customer base. The future growth of the firm after deconglomeration depends on the customer base of the retained businesses (rather than on customers inherited through acquisition of unrelated businesses in conglomerates). Consequently, firms are more likely to adopt a long-term orientation in their relationships with their customers after deconglomeration. This is likely to enhance the firm's commitment to satisfying customers' needs. Customer orientation involves keeping track of customers' needs and disseminating this information within the organization (Narver and Slater 1990). Greater customer orientation enables a firm to perceive customer dissatisfaction, should such a situation exist, and respond to the causes of customer dissatisfaction. Consequently, greater customer orientation can be expected to support the firm's efforts to retain customers as well as attract new customers in the markets served by its businesses. In effect, when the firm's relationship is centered on fewer businesses, the increased importance of both customer retention and attracting new customers for growth makes it imperative that firms become more customer oriented after deconglomeration.

Furthermore, it becomes possible for the firm to upgrade its customer support activities and become more customer oriented because of the resources made available by deconglomeration. The ability of the firm to scan markets, understand customers' needs better, and satisfy these needs can improve as a result of redeployment of resources to nurture businesses retained in the firm's portfolio. In summary, compared with its predecessor, the firm that emerges in the aftermath of deconglomeration is likely to (1) devote greater attention to acquiring information about customers' needs and responding to their needs and (2) deploy more resources toward these activities, making the businesses retained by the firm more customer oriented.

> P_{13}: The greater the deconglomeration intensity, the greater is the level of customer orientation of the businesses retained by the firm.

Effect on New Product Introduction

New product development through innovations is critical to the long-term viability of firms. Some innovations may be informal as a result of digression from routine activities in firms and design improvements through "learning by doing," but to an increasing degree, innovation is the result of formal research and development (R&D) (Scherer and Ross 1990). Informal innovative activities can be encouraged by building capabilities to learn by doing, and formal innovative activity through R&D can be encouraged by instituting the right incentive systems to motivate managers to take risks. Deconglomeration can be expected to enable firms to improve their innovative ability by enhancing their capacity to learn by doing and by allowing them to use incentive systems more attuned to the promotion of risk taking by managers (Hoskisson and Hitt 1994). Furthermore, as explained next, firms are likely to pursue innovation with greater zeal after deconglomeration because of its heightened importance.

As Dosi (1988) notes, the heuristics of how to do things and how to improve them are often captured and embodied in organizational routines. Much of this knowledge, therefore, has the characteristic of tacitness. Through practice, repetition, and incremental improvements of such routines, firms develop the ability to explore opportunities in certain areas and create specific marketable products. By their very nature, such tacit skills are also likely to be of use only within a narrow domain of products or services in which they tend to be valuable. A conglomerate firm would need to nurture many different skills in its different businesses, whereas a related diversified firm may need to develop and sustain fewer skills that will be used in all its businesses. Therefore, it may become difficult for a conglomerate, compared with a related diversified firm that uses the same skills in many businesses, to continuously develop and enhance the many different tacit skills required for success in many different businesses because of the more limited use of such skills. This follows from the observation that tacit skills are refined and improved through repetition. In other words, the focus on core competencies associated with deconglomeration should enhance the ability of firms to sustain and develop tacit knowledge further. Therefore, deconglomeration and organizing a firm around its core competencies may improve its ability to undertake informal innovative activity.

Innovative activities through R&D in firms often involve substantial degrees of risk because the technical and commercial outcomes of research activities cannot be determined accurately ex ante. Most R&D projects are of a long-term nature and thereby are inimical to short-term profitability. In a conglomerate firm, strategic control (i.e., the control of different businesses in the portfolio by evaluation of the strategies employed by them to compete) is difficult. The sheer strategic variety of the businesses in the corporate portfolio and the large spans of control will limit the ability of top management to exercise strategic control. This, in turn, may lead to a "by the numbers" orientation in which financial data are exclusively emphasized for control purposes (Hoskisson and Hitt 1988) and top management uses financial rather than strategic criteria to evaluate the performance of SBU managers. Typically, financial criteria such as return on assets and return on sales are short-term focused, whereas strategic criteria, designed to evaluate the quality of strategies, can be long-term oriented. Exclusive reliance on short-term–oriented financial criteria by conglomerates could lead to a reduction in formal R&D activity in firms. The use of strategic controls in conjunction with financial controls to influence managerial behavior, a greater possibility after deconglomeration, may alleviate this problem (Hoskisson and Hitt 1994). Furthermore, some of the resources freed up by deconglomeration could be used for expansion of R&D programs.

Reduction in a firm's debt after deconglomeration can also be expected to cause an upswing in R&D investment in firms (Hitt, Hoskisson, and Ireland 1990; Hoskisson and Hitt 1994). Conglomerate firms often use debt as a mode of financing diversification. A firm's debt holders are typically risk averse and may not encourage long-term–oriented R&D activity. Therefore, deconglomeration is likely to enhance the innovative capability of firms. In summary, both informal and formal innovation is likely to experience an upswing in the aftermath of deconglomeration. Consequently, new product intensity (i.e., the percentage of revenues derived from new products) may increase in the businesses retained by the firm after deconglomeration.

P_{14}: The greater the deconglomeration intensity, the greater is the new product intensity in the businesses retained by the firm.

Effect on Brand Advertising

The greater ability of the firm to use strategic controls after deconglomeration can also be expected to influence the relative emphasis of its businesses on brand advertising and sales promotion in the marketplace. Brand equity, a market-based asset of immense value to the firm, is a function of customers' awareness and favorable attitudes toward a brand. A firm that develops brands of superior equity can leverage the equity to improve its cash flows and thereby generate shareholder value. Apart from superior product attributes, brand equity may be created by the use of extensive advertising promoting a brand's image (Srivastava, Sherwani, and Fahey 1998). Developing brand equity through image advertising is essentially a long-term activity necessitating considerable advertising expenditures.

Since the 1970s and continuing into the late 1980s, advertising expenditure as a percentage of total marketing communications expenditures has shrunk considerably, whereas expenditure on sales promotion has seen a corresponding increase. Although many reasons can be given for the relative decline in the use of advertising and the increasing use of sales promotion, one critical reason has been the short-term orientation of firms and the corresponding pressure on managers to produce immediate sales results (Blattberg and Neslin 1989). Sales promotion essentially involves the use of incentives (1) to induce the trade and consumers to buy a brand and (2) to motivate and encourage the sales force to sell it. The incentive, which could take different forms, changes the value proposition of the brand temporarily. Sales promotion programs typically are used to boost the sales of the brand temporarily by employing a stronger short-term push strategy. However, this tactic may have serious long-term drawbacks. First, the increase in promotion expenditures often comes at the expense of advertising to build the brand's equity. Second, by frequently employing promotions, manufacturers condition customers to become deal prone—to buy only when the brand is on promotion. In other words, frequent promotions change the value proposition of the brand in the consumers' perception in the direction of the temporary value proposition created by the promotion. Therefore, frequent promotions could dilute the equity of the brand (Shimp 1999).

As noted, frequent promotions are often a result of short-term–oriented policies. Such policies, as observed previously, are more likely in conglomerate firms because of the greater tendency in such firms to use financial controls exclusively. After deconglomeration, a firm is more likely to use strategic controls in conjunction with financial controls. Furthermore, in the more focused firms that emerge from deconglomeration, the role of top management is more likely to be that of custodian of the firm's resources such as brand equity than that of an arbiter of financial capital. These changes are likely to encourage long-term efforts at building the equity of the brand through advertising and other activities. Thus, deconglomeration is likely to result in an increase in advertising expenditure and a corresponding decrease in sales promotion activities.

P_{15}. The greater the deconglomeration intensity, the greater is the advertising intensity (ratio of advertising expenditures to total promotion expenditures) of the businesses retained by the firm.

Effect on Corporate Culture

Corporate culture has been defined as a set of values shared by the members of an organization (Deshpandé and Webster 1989). Primarily, corporate culture guides managers into acceptable behaviors implicitly and thus reduces the need for formal monitoring (Deshpandé, Farley, and Webster 1993). Organizations benefit from developing a strong culture that is consistent with achieving their desired objectives. Two dimensions characterize corporate or organizational culture. The first dimension ranges from organic to mechanistic processes. Organic processes refer to a firm's focus on flexibility, spontaneity, and individuality, whereas mechanistic processes refer to an organization's focus on control, stability, and order. The second dimension represents at its two extremes the extent to which a firm focuses on internal maintenance and external positioning. Internal maintenance refers to the emphasis on the extent to which activities are smoothed and integrated within the organization to enhance efficiency. External positioning is the emphasis of the organization on competition and achieving differentiation in the marketplace (Deshpandé, Farley, and Webster 1993).

In reference to these dimensions, Deshpandé, Farley, and Webster (1993) distinguish between four modal cultures—market, clan, hierarchical, and adhocracy. A market culture emphasizes competitive advantage and market superiority. Loyalty, tradition, and internal maintenance are viewed as critical in the clan culture. The hierarchical culture emphasizes predictability and smooth operations. Innovativeness, entrepreneurship, and risk taking are viewed as critical for success in adhocracy cultures. It should be noted, however, that though these cultures are not necessarily mutually exclusive, over time one type of culture might emerge dominant in a firm.

A conglomerate firm must integrate and run many unrelated businesses, none of which is likely to receive a high degree of attention from top management. These organizations may emphasize internal maintenance and predictability because of the need to run unrelated businesses smoothly. It is more likely that under such conditions firms may emphasize loyalty and tradition or have norms that encourage a high degree of predictability. This follows from the possibility that managerial information processing abilities are likely to be restricted in a conglomerate firm. This, in turn, would necessitate an emphasis on cultures that encourage loyalty and predictability, in which lower-level managers can be expected to behave in ways considered desirable by senior management without a high degree of monitoring. In other words, a conglomerate is more likely to focus on efficiency and encourage clan or hierarchical cultures.

In contrast, the relatively more focused firms that emerge in the aftermath of deconglomeration are likely to encourage cultures that emphasize concentrating on competition and building competitive advantage. Furthermore, they may also focus on risk-taking cultures that emphasize innovation. This follows from the need of focused firms to grow through competitive activities that snare market share from competitors or through innovative activities that help market development. These firms are less likely to emphasize cultures that attempt to make the organization predictable and efficient in place of ones that emphasize aggressive market actions and innovations. In summary, after deconglomeration, firms are more likely to develop a corporate culture of the market or adhocracy types than the clan or hierarchical types.

> P_{16}: The greater the deconglomeration intensity, the greater is the likelihood of the firm developing an adhocracy or market culture as opposed to a clan or hierarchical culture.

Effect on Locus of Decision Making for Marketing Strategy

Issues related to marketing's influence within the firm, relative to other functional areas, have received considerable attention in marketing literature (Homburg, Workman, and Krohmer 1999; Walker and Ruekert 1987). A related issue is top management's influence in marketing strategy decisions and marketing's influence in corporate strategy decisions. As noted previously, strategy can be broadly construed as existing at the corporate, business, and functional levels in a firm. Correspondingly, strategic decision-making authority also tends to be distributed among these different levels in the firm. In other words, it is possible to distinguish between the locus of strategy (marketing, business, and corporate strategy) and the locus of decision making (marketing, business, and corporate management levels) (Varadarajan and Clark 1994). Deconglomeration can be expected to result in an upward shift in the locus of decision making for some of the marketing strategy decisions from the marketing function to the business and/or corporate levels.

Research shows that the more diversified the firm, the more time is spent on corporate-level planning rather than business-level planning (Leontiades and Tezel 1981). After deconglomeration, when the firm's portfolio is composed of fewer businesses, the demands placed on top management's time toward addressing portfolio management issues such as business addition and deletion and resource allocation are likely to diminish. Deconglomeration can therefore be expected to lead to cuts in staff and reductions in bureaucracy, which in turn places corporate executives in closer contact with business units (Hoskisson and Hitt 1994; Hoskisson and Turk 1990). Furthermore, the future growth of the firm becomes more dependent on the growth of businesses retained through marketing-oriented activities such as building brand equity and improving customer satisfaction. This heightens the likelihood of top management becoming more involved in marketing and business strategy decisions as well as boundary-spanning activities (e.g., greater and more frequent interface with customers, channel members, and the marketplace at large). Therefore,

> P_{17}: The greater the deconglomeration intensity, the greater is the extent of top management's involvement in marketing strategy decision making

Future Research Directions

This article has the potential to spur research pertaining to the proposed conceptual model as well as in other related areas. We first discuss issues related to the empirical testing of the conceptual model and elaborate on construct operationalization. After this, we discuss other potential issues for research in related areas.

Issues in Model Testing

The proposed model lends itself to testing in its entirety as well as in a modular manner (i.e., sections of the model delineating the linkages of [1] drivers to deconglomeration intensity and [2] deconglomeration intensity to outcomes). A brief explication of the rationale underlying the latter approach is perhaps required. Over a period spanning almost two decades, conglomerate firms have, to varying degrees, restructured their business portfolios through divestitures. Looking backward, it is important to gain insights into the extent to which the antecedent factors delineated in the model explain the portfolio-restructuring behavior of conglomerates. In this regard, an empirical study testing the relationships between deconglomeration intensity and its antecedents could provide valuable insights. Alternatively, because many firms (particularly in the United States) have already undergone deconglomeration, looking forward, it is critical to focus on the relationship between deconglomeration intensity and its hypothesized outcomes. In other words, depending on the perspective, the model could be tested in full or in two modules.

Alternative conceptualizations of the focal construct. In the proposed model, the focal construct is conceptualized as deconglomeration intensity. The model, however, is amenable to alternative conceptualizations of this construct. For example, the focal construct may be conceptualized as a nominal variable (the predeconglomeration and postdeconglomeration firm), where deconglomeration is perceived as a discrete event. In this case, testing the model would involve examinations of (1) how the antecedent conditions lead to a change in the status of the firm and (2) how this change in status influences the subsequent marketing behavior of the businesses in the firm's portfolio.

Alternative empirical settings. The model can be tested in an array of empirical settings, such as (1) a multicountry, longitudinal study; (2) a single-country, longitudinal study; (3) a multicountry, cross-sectional study; and (4) a single-country, cross-sectional study of a sample of firms. Testing the model longitudinally would entail examining the relationship between deconglomeration intensity and the extent of change in the antecedent variables (e.g., the degree and direction of change in the intensity of antitrust policy deterrents to intraindustry mergers) over a defined multiyear time frame. This can be studied in a single-country or multicountry setting. A cross-sectional study in a single-country setting, though feasible, would be somewhat limiting, because for some of the antecedent constructs, variance can be expected only in a multicountry setting.

Furthermore, only a longitudinal research design would allow for the inclusion and assessment of the relative effect of the construct "openness of international markets." Intrinsically, this is a global-level construct that varies over time. The world at large is more open to international trade and foreign direct investments now than before and is likely to be even more open in the future. In other words, a cross-sectional design would involve testing a reduced model of the antecedents to deconglomeration. However, the full model can be tested for the consequences section. Both the full model and the submodels, however, are amenable to testing as specified in a cross-sectional setting by means of perceptual measures in place of objective measures (e.g., management's perceptions of the openness of international markets, intensity of antitrust policy deterrents to intraindustry mergers, as predictors of deconglomeration intensity). In summary, we wish to emphasize that the proposed model can be tested with a variety of approaches.

Data sources and construct operationalization. Testing of the full model or the submodels can be accomplished through secondary data (e.g., objective archival measures of the openness of international markets), primary data (e.g., managers' perceptions of advertising intensity before and after deconglomeration), or some combination of both. In Table 1, we summarize some potential measures of the constructs that can be developed mostly from archival data sources. The proposed approaches to construct operationalization in Table 1 are intended to be suggestive and are therefore in need of further refinement. A detailed discussion of measurement-related issues is beyond the scope of this article.

Other Related Research Issues

The case of premium conglomerates. Although deconglomeration has indeed been a major force in reshaping the contemporary corporate landscape and has been motivated by a variety of drivers delineated in Figure 1, a small minority of firms continues to operate successfully as conglomerate, diversified firms. A Boston Consulting Group study (Heuskel 1996) reports that the distinguishing characteristics of "premium conglomerates" are their executives' skills in managing complexity. According to the study, premium conglomerates excel in three managerial tasks:

- Making acquisitions only when the competitive logic is compelling and not hesitating to divest businesses that are competitively at a disadvantage or are a poor fit,
- Managing portfolios of businesses as well as people and ideas (e.g., initiatives to replicate best practices across the company), and
- Mobilizing and deploying capabilities to breach competitive barriers and enter new businesses (i.e., making complexity their ally).

A closer examination of these three areas of excellence for premium conglomerates reveals their ability to overcome the weaknesses that beset the typical conglomerate. The existence of such firms neither negates the occurrence of deconglomeration nor invalidates the more general drivers and implications of deconglomeration. Rather, these exceptions provide an opportunity for further research. A detailed discussion of endogenous (e.g., leadership style, organizational structure, systems) and exogenous (e.g., structural characteristics of the industries) factors underlying the superior performance of premium conglomerates is beyond the scope of this article. However, we recognize its importance in the broader context of enhancing the understanding of the linkages among environment, strategy, competitive advantage, and firm performance.

Research on product elimination. The literature in marketing devoted to the study of product deletion decisions (Boulding, Morgan, and Staelin 1997; Montgomery and Urban 1969) has a long history. Many of the theories we used in this article to explain business deletion decisions can be leveraged to enhance the understanding of deletion decisions at the product and brand levels. In other words, although we focus on explaining business deletion decisions of firms, the theories explicated in this article could aid marketing managers and marketing researchers in understanding better the forces that shape a business's portfolio of products and brands.

Resource redeployment and brand rationalization. As noted previously, deconglomeration is associated with redeployment of resources from businesses divested to businesses retained by the firm. The pattern and mode of such redeployment is an important issue for further research. Although we indicate the broad redirections of such redeployment, an investigation of the specific directions of this redeployment could help illuminate the process behind the change in firm

TABLE 1
Drivers and Outcomes of Deconglomeration: Construct Operationalization Issues[a]

Construct	Operationalization
P_1: International market openness	Foreign direct investment over a specific period
P_{2a}: Intensity of antitrust policy deterrents to intraindustry mergers and acquisitions	Number of horizontal mergers and acquisitions over a specific period
P_{2b}: Intensity of antitrust policy deterrents to diversification into related businesses	Number of mergers and acquisitions among related businesses over a specific period
P_3: Legitimacy of organizational form	Share price penalty for conglomerate diversification
P_4: State of development of the market for corporate control	Number of takeovers during a specific period
P_5: Composition of top management compensation	Ratio of the value of long-term options (stock option grants, share grants, and performance incentives) to total compensation
P_6: Level of institutional activism	A count measure of the number of instances of announced activism over a certain period (David 1996)
P_7: Behavior of referent firms	Number of conglomerate firms engaging in deconglomeration over a specific period
P_8: Industry-specific market power	Market share of Business X in the firm's portfolio
P_9: Strategic variety	A measure combining the relatedness of businesses in a firm's portfolio and the number of markets in which it operates
P_{10}: Competitor orientation	Extent to which firms focus on learning about the actions of their rivals (Narver and Slater 1990)
P_{11}: Multimarket contact	Count number of market contacts as a percentage of total number of markets (Gimeno and Woo 1996)
P_{12}: Seller concentration	Combined market share of the four largest businesses in the industry
P_{13}: Customer orientation	Expenditure on customer support and customer information generation as a percentage of sales
P_{14}: New product intensity	Number of new products/total sales (Hitt, Hoskisson, and Ireland 1990)
P_{15}: Advertising intensity	Advertising expenditure/total promotion expenditure
P_{16}: Organizational culture	Measure of adhocracy, clan, hierarchy, or market culture (Deshpandé, Farley, and Webster 1993)
P_{17}: Locus of decision making	Percentage of time allocated to marketing strategy decision making by top management

[a] As is detailed in the text of the article, several of the constructs listed in the table are amenable to operationalization as perceptual measures; for example, on a five-point scale, managers' perceptions of the intensity of antitrust policy deterrents to intraindustry mergers and acquisitions can be measured "much greater than before," "greater than before," "about the same," "lower than before," and "much lower than before."

behavior after deconglomeration. The importance of such issues is highlighted in a recent study by Capron and Hulland (1999) that examines the extent to which firms redeploy three key marketing resources (brand names, sales forces, and general marketing expertise) after horizontal acquisitions.

Resource redeployment is reflected in the brand rationalization activities that firms often undertake after deconglomeration and the subsequent acquisitions of competitors of the businesses retained in order to pursue focused growth. In these cases, the firm will likely inherit several brand names in the product categories in which it already competes. Brand rationalization–related issues could be expected to assume center stage in those firms, which through one or more intraindustry acquisitions inherit the rights to more brand names than they view as optimal. Brand-related issues that such firms may be required to address include (1) deciding which brand names to retain and phase out, (2) pursuing opportunities for brand consolidation through brand fusion/dual branding (e.g., melding of currently owned brand names and inherited brand names), and (3) organizing retained brand names into categories such as corporate-, business-, and product-level brand names or global brands, multicountry regional brands, country-specific national brands, and country-specific regional brands.

Research on other cross-level issues. The primary focus of this article was a cross-level strategic issue: the implications for marketing of a corporate-level strategic decision. At a more fundamental level, it is conceivable that corporate strategy, in turn, is influenced by functional-level and business-level strategies. The manner in which key businesses in a firm's portfolio choose to compete could influence the portfolio composition if the strategic imperatives of different businesses are conflicting. Furthermore, functional-level strategies (R&D strategy, financial strategy, marketing strategy, and operations strategy) could constrain a firm's portfolio of businesses if the strategies employed by the functional areas of different businesses are conflicting.

Yet another cross-level issue that merits the consideration of marketing strategy researchers is the role that top management's characteristics play in the market-level behavior of firms. Strategy researchers have taken the upper-echelons approach to study how idiosyncratic processes and biases in top management's behavior influence the strategies adopted by firms. This approach is guided by the view that an organization reflects its top executives' perspectives. Therefore, the characteristics and functioning of top management could be a crucial determinant of organizational behavior (Hambrick and Mason 1984). Hambrick, Cho, and Chen (1996) suggest that there is a need to examine how top management team characteristics influence microcompetitive behavior, supporting the need for cross-level research. This is an area in which marketing academicians can play a significant role.

Conclusion

In this article, we examine the dependency of marketing strategy on corporate strategy by developing a model that delineates the drivers and outcomes of deconglomeration. As detailed in the article, the corporate strategy shift that gave rise to deconglomeration is likely to have significant implications for marketing. Specifically, the portfolio of businesses managed by a firm could play a fundamental role in determining the market-level strategies of the businesses. The strategic role of marketing in organizations is also likely to be reshaped in the more focused firms that emerge after deconglomeration.

This article contributes to research in marketing strategy by highlighting cross-level strategic interdependencies. We elaborate on the changes in marketing strategy and processes in the focused firm that emerges after deconglomeration. In the process, we focus the attention of marketing scholars and managers on a critical phenomenon that has reshaped the world of business. The theoretical insights that we provide in this regard can also be leveraged into enhancing the understanding of product deletion decisions of firms. We provide guidelines for empirical research by developing research propositions and discussing measurement issues of critical constructs. More generally, we hope to spur additional research in the area of strategic interdependencies in organizations.

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Joseph P. Cannon & Christian Homburg

Buyer–Supplier Relationships and Customer Firm Costs

Academic literature and business practice are directing increased attention to the importance of creating value in buyer–supplier relationships. One method for creating value is to reduce costs in commercial exchange. The authors develop a model that explains how supplier behaviors and the management of suppliers affect a customer firm's direct product, acquisition, and operations costs. The model proposes that these costs mediate the relationship between buyer–supplier relationship behaviors and the customer firm's intentions to expand future purchases from the supplier. The model is tested on data collected from almost 500 buying organizations in the United States and Germany. The results indicate that increased communication frequency, different forms of supplier accommodation, product quality, and the geographic closeness of the supplier's facilities to the customer's buying location lower customer firm costs. In addition, customer firms intend to increase purchases from suppliers that provide value by lowering each of these costs.

The business marketing and channel management literature has been paying increasing attention to understanding the benefits of building closer buyer–seller relationships (Ganesan 1994; Morgan and Hunt 1994). Most of the research has focused on explaining how relational processes lead to outcomes such as cooperation, satisfaction, trust, and commitment. Those performance outcomes are important, but relatively little attention has been directed to the direct, cost-based economic outcomes of close relationships with customers. Anderson (1995, p. 348, italics added) notes that though "the essential purpose for a customer firm and supplier firm engaging in a collaborative relationship is to work together in ways that add value or *reduce cost* in the exchange between the firms ... [h]ow well do practitioners or academics understand this event, or the mechanisms through which it occurs?"

Recently, business practitioners have sought to quantify the value that might be derived from efficient management of buyer–supplier relationships (Cooper and Slagmulder 1999). Buying firms are paying more attention to working with suppliers that deliver value by helping lower a customer firm's costs. Given that 56% of the average manufacturing firm's budget is spent on materials (Heberling 1993), customer firms may realize significant opportunities for cost savings by identifying suppliers that behave in ways that help lower the customer firm's costs.

Approaches for working through suppliers to reduce costs generally fit into one of two categories (Wilson 1995). Adversarial approaches involve bidding procedures in which multiple suppliers compete against one another in an effort to drive down prices (Amihud 1976). Collaborative approaches seek to lower acquisition and operating costs through joint efforts of the buyer and supplier (Kalwani and Narayandas 1995; Noordewier, John, and Nevin 1990). The collaborative movement underlies cooperative trends that have emerged in many industries under such names as efficient consumer response, quick response, supply chain management, and just-in-time.

One key to understanding the differences between the two types of approaches is recognizing the different types of costs that may be affected by supplier relationships. The adversarial approaches focus on driving down price. The more collaborative approaches promote cooperation to drive down other costs inherent in exchange. Their advocates claim that total costs—including direct product costs and the customer's acquisition and operational costs—can be lowered when buyers and suppliers work together closely (Van Mieghem 1995).

The purposes of our research were twofold. First, we sought to investigate how particular supplier behaviors and a customer firm's management of suppliers affect the customer firm's costs. Second, we wanted to understand if a customer firm would be more likely to expand future business with suppliers that helped lower its costs, which would provide a reason for suppliers to engage in behaviors that lower customer costs.

Literature Review

The subject of cost management is multidisciplinary and has received attention from scholars and practitioners in many fields. In Table 1, we provide a summary of the different streams of literature that address costs in buyer–supplier relationships, briefly describe each stream's focus on costs

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TABLE 1
Summary of Research on Cost Management Relevant to Buyer–Supplier Relationships

Literature Base	Treatment of Cost	Strategies for Lowering Costs	Representative Literature
Cost accounting	Activity-based costing identifies and assigns costs to the appropriate source.	Applying cost measurement systems to trace sources of all types of costs more accurately.	Cooper and Slagmulder 1999; Ellram 1996; Johnson and Kaplan 1987
Marketing	The identification of factors that characterize more cooperative exchange relationships and the conditions in which more cooperative exchange helps lower costs.	Relational exchange characterized by frequent communication, open sharing of information, flexible suppliers, and greater accommodation of customers by suppliers.	Anderson 1995; Dahlstrom and Nygaard 1999; Kalwani and Narayandas 1995; Noordewier, John, and Nevin 1990; Wilson 1995
Classical purchasing	Obtaining the lowest pocket price or direct product costs.	Competitive bidding practices, maintaining multiple sources of supply.	Amihud 1976; Marquardt 1988
Transaction cost economics	Identifying particular governance modes to minimize transaction (primarily acquisition and monitoring) costs.	Relying on the market through competitive bidding and/or maintenance of many suppliers, make versus buy.	Rubin 1990; Williamson 1985
Modern purchasing	Focus on total costs, including lowering acquisition and operations costs.	Careful supplier selection, single sourcing, reverse marketing, value analysis.	Heberling 1993; Marquardt 1988
Manufacturing and TQM	Improving quality lowers operations costs by reducing rework, customer service, and other costs.	Selecting suppliers of higher-quality products, using fewer suppliers, greater accommodation on the part of suppliers, and more open sharing of relevant information.	Crosby 1979; Gyrna 1988; Hill 1994; Rust, Zahorik, and Keiningham 1994
Logistics	Better management of acquisition costs—in particular, inventory carrying and transportation costs.	Just-in-time delivery and inventory systems, co-location of facilities or selecting suppliers located geographically closer, more frequent communication, more open sharing of relevant information.	Robeson and Copacino 1996; Tyndall 1988

and strategies for lowering costs, and cite representative literature. Our review of the extant literature focuses on identifying the types of costs relevant in buyer–supplier exchange and the factors expected to affect these costs.

Three types of customer costs are prominently discussed as being affected by supplier relationships: (1) direct product costs (price), (2) acquisition costs, and (3) operations costs (Gyrna 1988; Noordewier, John, and Nevin 1990). *Direct product cost* is the actual price charged by the supplier for the main products sold to a customer firm. Because this cost is the most easily measured, it traditionally has received the most attention from business buyers and sellers. *Acquisition costs* are defined as costs customers incur in acquiring and storing products from a particular supplier. They include expenses related to ordering, delivering, and storing products, as well as the expense of monitoring supplier performance and coordinating and communicating with the supplier (Ellram 1996). Lowering such costs has been the primary objective of the supply chain management movement in purchasing and logistics practice. *Operations costs* are costs inherent in the customer firm's primary business. In the manufacturing context of our study, such costs include expenses for research and development, manufacturing and downtime, and internal coordination (Gyrna 1988). The quality movement and activity-based costing have directed attention to the ability of supplier relationships to affect those expenses (Cooper and Slagmulder 1999; Crosby 1979). Together, direct product, acquisition, and operations costs form the total customer firm costs affected by supplier relationships.

The current study draws on, integrates, and extends prior research in this area. First, we explore benefits that might accrue to suppliers that make investments that lower a customer firm's costs—specifically to determine whether lowering a customer's costs results in increased purchases from the supplier. Second, although previous empirical research in marketing has addressed costs (see Dahlstrom and Nygaard 1999; Kalwani and Narayandas 1995; Noordewier, John, and Nevin 1990), we sought to examine a broader set of factors that might affect customer costs. Therefore, the focus of our multidisciplinary review was to identify strategies and tactics used for addressing costs in commercial exchange.

Model Development

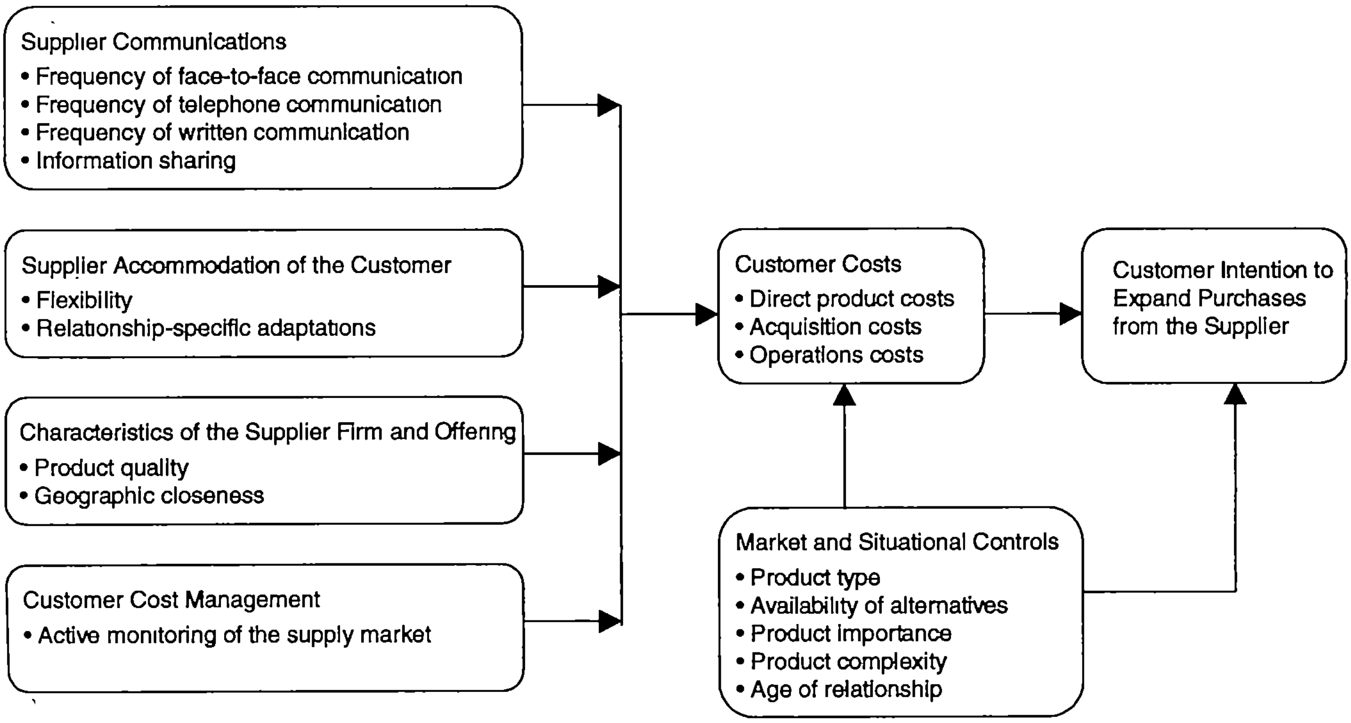
We supplemented our review of the multidisciplinary cost management literature with interviews from purchasing and marketing professionals. The literature review and interviews suggested four factors as most relevant: supplier communication, supplier accommodation, characteristics of the supplier, and the customer's use of the market mechanism (see Figure 1). We also examine the benefits that might accrue to suppliers when customer costs are lowered in order to investigate whether lower customer costs affect a customer's future purchase intentions. Thus, the model focuses on customer costs as a key mediating variable in understanding how relationship behaviors affect customers' long-term purchase intentions.

Effects of Communication on Customer Costs

Communication is essential in setting priorities and coordinating activities to accomplish each party's objectives (Mohr, Fisher, and Nevin 1996). In this research, we examine the effects on customer costs of two facets of communi-

FIGURE 1

Factors Affecting the Buying Firm's Costs and Intention to Expand the Supplier's Share of Business


Supplier Communications
• Frequency of face-to-face communication
• Frequency of telephone communication
• Frequency of written communication
• Information sharing
Supplier Accommodation of the Customer
• Flexibility
• Relationship-specific adaptations
Characteristics of the Supplier Firm and Offering
• Product quality
• Geographic closeness
Customer Cost Management
• Active monitoring of the supply market
Customer Costs
• Direct product costs
• Acquisition costs
• Operations costs
Customer Intention to Expand Purchases from the Supplier
Market and Situational Controls
• Product type
• Availability of alternatives
• Product importance
• Product complexity
• Age of relationship

cation that have been found to be valuable in commercial exchange: communication frequency (Mohr, Fisher, and Nevin 1996) and open information sharing (Heide and John 1992). Assuming that such information is used by customer firms, we anticipate that it affects customer costs.

Communication frequency. Daft and Lengel (1984) propose that modes of communication differ in their richness and thus their capability for conveying information. Richer modes (e.g., face-to-face) allow for more customized communication, immediate feedback, and the ability to gather additional data through observation. Daft and Lengel (1984) note that written and electronic communications are less rich communication modes that are most effective for communicating large amounts of formal and standardized information.

Although richer modes of communication convey more complex and variable information, they typically involve higher costs. The key to more effective and efficient communication is matching the mode of communication to the type of problem being addressed. When issues are complex, nonstandardized, and unpredictable, richer modes of communication (i.e., face-to-face) are preferred. Alternatively, more mechanical and routinized problems are best addressed with less rich modes that are more effective and efficient (Daft and Lengel 1984). Therefore, to understand the effects of communication frequency on customer costs, we separately examine the frequency of communication by face-to-face, telephone, and written/electronic means.

The types of issues addressed in the acquisition and storage of supplies differ from those in which a supplier becomes involved in a customer's operations. Acquisition procedures are designed to become routinized and standardized over time. Buyers and suppliers develop systems for handling ordering and delivery. Furthermore, inventory carrying costs are a function of the uncertainty in delivery reliability and product availability, and more frequent communication about the status of orders and supplier stock reduces this uncertainty. Consequently, customers do not need to carry as much inventory, which lowers carrying costs. Good information is key to effective just-in-time inventory management and delivery (Song and Zipkin 1996). Typically, the types of exceptions to these processes (e.g., lost orders, late deliveries) are routine enough that interfirm procedures for handling them become formalized and easily handled on the telephone.

The relatively routine and predictable nature of issues in product acquisition suggest that the most effective and efficient means of communication would rely on frequent use of less rich modes. Thus we predict that

H_1: More frequent (a) telephone communication and (b) written/electronic communication lower acquisition costs for customer firms.

In contrast, a supplier's involvement in a customer's operational activities frequently entails more elaborate problem-solving opportunities. More frequent communication enables the supplier to gain a deeper understanding of how its products are used by the customer. More frequent communications with suppliers during product development can result in more efficient new product development (O'Neal 1993).

Although each of these forms of interaction suggests complex and nonstandardized problems, many related sub-issues are relatively standardized. For example, the transmission of technical specifications or following up with additional questions may be accomplished most efficiently by telephone or written/electronic communication. Thus, although the more costly face-to-face mode would be useful for solving the complex issues in a customer's operations, the other modes would also be used to support these activities.

H_2: More frequent (a) face-to-face communication, (b) telephone communication, and (c) written/electronic communication lower operations costs for customer firms.

Information sharing. Supplier information sharing is defined as the extent to which the supplier openly shares information about the future that may be useful to the customer relationship. When a supplier openly shares information, the buying firm gains insights about the acquisition and use of the supplier's products. The supplier thus provides the basis for cooperating on ways to lower the customer's costs. Open communication can also foster functional conflict (Anderson and Narus 1990), which can be the basis for identifying and solving problems related to lowering costs. For example, early information about changes in a supplier's product line enable the customer to make timely changes in acquisition and operational procedures, thus avoiding costly crash programs. Disruptions in the supply chain can have a ripple effect on a customer's operations costs by decreasing plant use—a particularly important source of costs in industrial manufacturing firms, where fixed costs are often high. An open flow of information from the supplier helps the customer anticipate the supplier's future plans, enabling the two firms to coordinate product development and manufacturing schedules.

For such information to have an effect on customer costs, the information must influence the customer's planning and strategic supplier management activities. Thus, the auxiliary hypothesis is that this information is used by customer firms.

H_3: More open supplier information sharing lowers (a) acquisition costs and (b) operations costs for customer firms.

Effects of Supplier Accommodation on Customer Costs

Supplier organizations may choose, or be asked, to make special accommodations for a customer. Accommodations may involve relaxing rules or policies in response to a customer's short-term needs or establishing new policies and making major investments such as customizing products or routines. Those two forms of supplier accommodation are termed "flexibility" and "adaptation."

Supplier flexibility. Supplier flexibility is defined as the extent to which the supplier is willing to make changes to accommodate the customer's changing needs (see Noordewier, John, and Nevin 1990). Such accommodation typically involves short-term responses to sudden, often unanticipated customer needs. A flexible supplier may apply rules and policies loosely and grant exceptions to meet customer requests. A supplier may also provide flexibility through modular product/service offerings (Anderson and Narus 1995; Wilson, Weiss, and John 1990).

A primary source of cost in many organizations is the maintenance of sufficient organizational slack—a cushion of resources that enables the firm to adjust to environmental change (Cyert and March 1963). Maintaining higher levels of these resources (e.g., inventory, personnel, underutilized plant capacity) raises a firm's costs. Flexible suppliers enable a buying organization to reduce levels of slack. For example, a buying firm may order less frequently or carry less inventory if the supplier is flexible in responding to an occasional, unexpected spike in demand from the buying firm. Reducing the need for customer slack not only lowers the customer firm's acquisition costs but also reduces downtime, which helps lower operations costs. By absorbing environmental shocks for customer firms, flexible suppliers lower a customer's costs.

H_4: The more flexible the supplier, the lower are the customer firm's (a) acquisition costs and (b) operations costs.

Relationship-specific adaptations. Relationship-specific adaptations are changes in process, product, or procedures specific to the needs of a particular customer (Hallen, Johanson, and Seyed-Mohammed 1991). In contrast to flexibility, adaptations tend to be long-term accommodations by a supplier that involve investments or permanent changes in rules and procedures designed to meet a particular customer's needs. A supplier may use adaptations to create dependence by making alternatives more costly for the customer. This can be readily accomplished by using adaptations to lower a customer's costs. A supplier may train shipping people or tailor information systems to meet the delivery needs of a specific customer (often necessary to implement just-in-time), thus reducing the customer's acquisition costs. Alternatively, a supplier may hire personnel with specific technical skills who will understand the customer's manufacturing technology better. Customized products often lower the customer's manufacturing costs and provide better functionality for the customer than higher-cost alternatives. Therefore, customizing products, personnel, systems, and practices to the customer's needs should lower acquisition and operating costs for the customer.

Customizing products and services raises the supplier firm's costs in product development, delivery, manufacturing, and selling. A supplier may no longer benefit from economies of scale in production or operations. Furthermore, the value created by such adaptations should enable the supplier firm to charge a premium price for its products. We therefore predict that relationship-specific adaptations increase direct product costs while lowering acquisition and operations costs for the customer firm.

H_5: The more the supplier makes relationship-specific adaptations to the customer firm, (a) the higher are the customer firm's direct product costs, (b) the lower are the customer firm's acquisition costs, and (c) the lower are the customer firm's operations costs.

Effects of Characteristics of the Supplier and Its Offering on Customer Costs

Characteristics of the supplier firm and its offering may also affect the customer's costs. The literature suggests that quality of input (Gyrna 1988; Rust, Zahorik, and Keiningham 1994) and the physical distance from buyer to supplier (Levy 1995) may affect costs.

Product quality. A firm that purchases low-quality materials may have higher manufacturing costs due to rework, downtime, or scrap. In addition, it must invest more time and energy in appraisal, quality control, and monitoring activities to ensure that its end product meets field or service specifications. Failures in the manufacturing process create uncertainty and problems that can increase the cost of coordination between manufacturing, research and development, marketing, sales, and purchasing. Together, those factors raise the operations costs for a customer firm that buys low-quality goods.

Furthermore, lack of confidence in the quality of goods provided by a supplier can force a customer firm to carry more inventory. Delivery costs increase when emergency shipments are required. The supplier and its shipments must be monitored more closely, which raises administrative costs. Together, such activities involve higher inspection costs, more field tests, and follow-up service, which raise the customer's acquisition costs for low-quality goods (Gyrna 1988).

A supplier's investments in quality may require and enable it to charge a higher price for its product. High-quality products are characterized by increased durability, better product features, or other product attributes that are valued by customers. To achieve these benefits, supplier firms may be required to purchase high-quality raw materials or components, incur high labor costs in manufacturing, or make other tangible investments (Garvin 1984). In addition, firms supplying high-quality goods might be expected to make greater investments in research and development and in quality certification programs and processes (e.g., ISO 9000). Furthermore, customer firms should be willing to pay a price premium to receive the enhanced benefits and greater value associated with high-quality supplies. Thus, an increase in product quality raises direct product costs, but lowers acquisition and operations costs for the customer firm.

H_6: Higher-quality supplies will (a) raise a customer firm's direct product costs, (b) lower a customer firm's acquisition costs, and (c) lower a customer firm's operations costs.

Geographic closeness to the customer. The location of a supplier's facilities remains an important criterion for selecting suppliers. Suppliers must make strategic decisions on where to locate manufacturing plants, sales offices, service personnel, and distribution centers. A supplier located geographically close to a customer has many facilities within a short distance of the customer facility that uses its products.

Acquisition costs are closely related to the geographic closeness of the supplier. Time zone differences can hamper ordering, coordination, and communications between the two organizations (Levy 1995). Delivery costs are typically higher when products travel longer distances. Finally, if shipments typically take a long time in transit, a customer firm may feel compelled to carry more inventory as safety stock.

H_7: Closer supplier facilities will lower the customer firm's acquisition costs.

Effects of a Customer's Active Monitoring of the Market on Customer Costs

The classic purchasing technique for lowering costs is to take advantage of and actively foster competition in the supply market (Amihud 1976; Wilson 1995). Although the approach has been challenged by the total quality management (TQM) literature, many firms continue to rely heavily on the market mechanism to keep suppliers in check and prices low. We define *active monitoring of the market* as the extent to which the buyer actively monitors the products and prices of alternative sources of supply. In practice, it can involve frequent use of the bidding process for supplier selection decisions and reliance on multiple sources for a supply.

Critics of the market and bidding process in organizational buying note that the process can result in higher internal costs (Wilson 1995). Managing multiple supplier relationships can raise a variety of acquisition-related costs. For example, ordering costs will not benefit from the routines established with a single supplier or small set of suppliers, and administrative, communication, and coordination costs are multiplied with additional suppliers. Furthermore, the purchasing group must spend time actively monitoring the supply market.

Operations costs also may be raised. The use of multiple supply sources increases variance in the production process. To ensure greater consistency of input, many firms require not only that a single source of supply be retained but also that all the supplies come from a particular production run by the supplier. Furthermore, active monitoring of the market signals a lack of commitment on the part of the customer firm, limiting the supplier's willingness to invest in efforts to lower the customer's costs. Therefore, although active monitoring of the market would lower a customer's direct product costs, it would raise acquisition and operations costs.

> H_8. The more actively the customer firm monitors the supply market, (a) the lower are the customer firm's direct product costs, (b) the higher are the customer firm's acquisition costs, and (c) the higher are the customer firm's operations costs.

Effects of Customer Costs on the Customer's Intention to Expand Purchases from Supplier

Creating value for customers is the essence of relationship marketing (Anderson 1995; Wilson 1995). Although value may come from a variety of sources and activities, one key for suppliers seems to be through lowering a customer firm's costs. As customer firms increasingly rely on tools such as value analysis in selecting and evaluating suppliers, suppliers that lower customer costs will be preferred. A supplier that enhances customer value by lowering customer costs will increase its "share of customer" at the expense of suppliers that do not provide such benefits.

> H_9 The lower the customer firm's (a) direct product costs with the supplier, (b) acquisition costs in its relationship with the supplier, and (c) operations costs in its relationship with the supplier, the higher is the customer's intention to expand future purchases from the supplier

Research Method

Data Collection and Sample

Data were collected in the United States and Germany by means of a questionnaire distributed to manufacturing firms in the chemical, mechanical, and electrical industries (U.S. Standard Industrial Classification codes 28, 30, 32–38). In the United States, the sample frame was drawn from members of the National Association of Purchasing Management (NAPM). The sample of German firms was provided by the German counterpart to NAPM, the Bundesverband für Materialwirtschaft, Einkauf und Logistik (BME), and the German Chamber of Commerce.

To enhance the generalizability of the results, we included samples of both domestic and transnational buyer–supplier relationships. The latter relationships involve buyers and sellers based in different countries. We thus enhanced the generalizability of the findings across two cultures and two types of buying situations while also providing increased variance on the geographic closeness measure.

In the United States, potential respondents were first contacted by telephone. Qualified and agreeable respondents were faxed a personalized letter and questionnaire. In Germany, questionnaires were mailed. Firms not responding after three weeks were faxed or mailed a follow-up letter and another questionnaire. Altogether, 529 completed questionnaires were returned, in which 227 U.S. (61% response rate) and 302 German (28% response rate) manufacturing firms reported on a supplier relationship. Twelve respondents reported a low level of confidence in their responses and were dropped. An additional 39 responses were discarded because of excessive missing data, leaving a final usable sample of 478.

Nonresponse bias was tested in two ways. First, early and late responders were compared on several descriptive variables (e.g., respondent's experience in purchasing, number of employees at respondent firm). Most of the late responders had responded only after receiving reminders. No differences were found between the two groups. Second, a sample of 85 nonrespondents (50 in Germany and 35 in the United States) was contacted by telephone and asked four questions (from the questionnaire) about themselves and their companies. Comparing their answers to those of the respondents suggested no differences. Together, the findings provide evidence that nonresponse bias was not a problem with these data.

Measure Development and Assessment

We followed standard psychometric scale-development procedures (Gerbing and Anderson 1988), also incorporating recommendations of international researchers (i.e., Douglas and Craig 1983; Mullen 1995). We generated multi-item scales on the basis of interviews with purchasing professionals and a review of the literature. We formulated measures with single- and multiple-item formats and conceptualized multiple-item scales as formative or reflective in nature. All measures are listed in the Appendix.

The questionnaire was designed in English. To validate translation equivalence, one person translated the questionnaire into German and another back-translated it into English (Douglas and Craig 1983). The original and back-translated versions were compared for conceptual equivalence and refined where necessary. The resulting versions were then pretested and further refined on the basis of comments from purchasing managers in the United States and Germany. Statistical procedures used to validate the reflective measures included assessments of cross-language metric equivalence, item and scale reliability, unidimensionality, and convergent and discriminant validity (Gerbing and Anderson 1988; Mullen 1995).

The operational definitions of several constructs in this study were such that measurement could best be done through formative measures. Acquisition and operations costs represent a variety of unique sources of costs. Although each item contributes to the total for each type of cost, items measuring a particular type of cost are not necessarily correlated. Such measures are best represented as a sum (i.e., composite) of the different components. Similarly, frequency of communication by the three different modes is defined as the number of times the customer firm communicated with different supplier personnel. Summing the communications across different personnel is consistent with the definition of the construct. Relationship-specific adaptations tap the extent to which the supplier makes different types of adaptations: Suppliers that adapt across a variety of areas are more adaptive than those who adapt in few or no areas. Finally, geographic closeness involves the proximity of the supplier's facilities. Suppliers that have many facilities near the customer would be closer than those with few or none. Measuring the distance from each supplier facility to the customer location best reflects this construct, but these different factors would not be expected necessarily to be correlated, which suggests a formative operationalization. Although a limitation with formative scales is the lack of good statistical tests for assessing validity and reliability, feedback from pretest respondents indicated that the scales were thorough in covering the construct domain and that the listing format was easily understood, which are properties of reliable and valid measures.

Metric equivalence. The first step in the analysis of the measures was to use structural equation modeling and confirmatory factor analysis to determine whether the factor loadings differed across the two different language samples. If the factor loadings were equivalent across the English and German language versions of the questionnaire, the samples could be combined for subsequent assessment procedures (Mullen 1995). Following Joreskog and Sörbom's (1993) recommendations, all scales were presumed ordinal, and polychoric correlation matrices were used in all analyses.

Two multiple-group confirmatory factor analyses were run with LISREL 8. The first constrained the factor loadings across the English and German language samples to be equivalent. The second allowed the factor loadings to be freed across the samples. A statistical test comparing the results showed no statistically significant differences in the factor loadings. The results provide evidence of metric equivalence across the two languages, and the two samples were combined for subsequent analysis.

Assessment of measures. In Table 2, we list summary statistics and a correlation matrix for the measurement scales using the combined sample. We then subjected the data to a confirmatory factor analysis. For the theoretical variables, the chi-square test is not statistically significant ($\chi^2_{(138)} = 152.63$, $p = .19$), and the goodness-of-fit index (GFI), nonnormed fit index (NNFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) indicate a good fit with the hypothesized measurement model (GFI = .94, NNFI = .99, CFI = .99, RMSEA = .022). For the control variables, fit statistics were also good ($\chi^2_{(51)} = 118.2$, $p < .01$; GFI = .96, NNFI = .97, CFI = .98, RMSEA = .051), and the results compare favorably with those in other research in this area and standards suggested by the literature (Baumgartner and Homburg 1996).

The reliabilities of the individual scales reported in Table 2 provide further evidence of the measures' sound psychometric properties—ranging from .72 to .91 for coefficient alpha and .79 to .93 on the composite reliability measure. The average variance extracted by each measure exceeds the .5 minimum cutoff suggested by Bagozzi and Yi (1988), ranging from .54 to .78. Finally, the item reliabilities reported in the Appendix are high as well.

Discriminant and convergent validity. We also used confirmatory factor analysis to assess discriminant and convergent validity. A 95% confidence interval was constructed around the estimates of correlations between the latent constructs. To the extent that the results do not include 1.0, this test provides some evidence of discriminant validity. In addition, a series of nested model comparisons assessed whether differences were present when correlations between the latent constructs were constrained to 1.0. Statistically significant differences between each model pair indicate discriminant validity. Finally, we conducted a more stringent test recommended by Fornell and Larcker (1981), which demonstrates discriminant validity by showing that the average variance extracted exceeds the squared correlation between all pairs of constructs. The results of all three tests provide strong evidence of discriminant and convergent validity of the reflective scales.

Data Analysis Procedures

The hypothesized model was estimated by structural equation modeling techniques, with the LISREL 8 program. Because prior research suggested that relative power, the age of the relationship, and the type of product might influence customer costs and future purchase intentions, these were included as control variables (Kalwani and Narayandas 1995; Noordewier, John, and Nevin 1990). Formative scales and control measures composites were assumed to have a reliability of .85 for purposes of model estimation (Jöreskog and Sörbom 1993).

Results

We report the results of the LISREL analysis and hypothesis tests in Table 3. The overall fit measures suggest that the hypothesized model provides a good fit for the data, particularly given the attenuation in fit measures for large models such as the one tested here. Although the chi-square test is statistically significant ($\chi^2_{(338)} = 1024.9$, $p < .01$), the GFI,

TABLE 2
Summary Statistics and Correlation Matrix for Measurement Scales

Statistic and Scale Name	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
Mean[a]	2.26	3.36	3.04	2.81	3.37	2.35	4.27	4.02	3.37	2.88	2.92	2.86	3.21	3.40	4.38	3.53	13.0
Standard deviation	1.07	1.13	1.03	.99	.90	.96	.80	1.34	1.10	.86	.64	.55	.99	.98	.77	.97	11.2
Range[b]	1.0–6.0	1.0–6.0	1.0–6.0	1.0–5.0	1.0–5.0	1.0–4.8	1.0–5.0	2.0–6.0	1.0–5.0	1.0–5.0	1.0–5.0	1.0–5.0	1.0–5.0	1.0–5.0	1.5–5.0	1.0– –5.0	.3–90
Reliability (α/ρ)[c,d]				.72 .79	84 .88		.81 .85		.81 .86				.91 .93	.84 .89	.87 .93	.79 .84	
Average variance extracted[d]				.55	.65		.58		.54				.78	.67	.77	.56	
1. Frequency of face-to-face communication																	
2. Frequency of telephone communication	.69																
3. Frequency of written communication	.49	.60															
4. Amount of information sharing	.33	.35	.33														
5. Supplier flexibility	.26	.23	.20	.43													
6 .Relationship-specific adaptation	.44	.40	.44	.51	.32												
7. Quality of supplier's products	.02	–.01	–.04	.14	.40	.05											
8. Supplier geographical closeness	.37	.40	.24	.22	.35	.13	.13										
9. Active monitoring of the supply market	.07	.06	.01	.14	.22	.03	.09	.22									
10. Customer direct product costs	–.13	–.06	–.12	–.20	–.27	–.14	–.17	–.04	–.06								
11. Customer product acquisition costs	–.32	–.27	–.26	–.34	–.45	–.29	–.30	–.44	–.16	.33							
12. Customer operations costs	–.24	–.14	–.19	–.25	–.43	–.24	–.34	–.27	–.06	.48	.70						
13. Anticipated expansion of purchases	.20	.26	.21	.28	.34	.25	.29	.12	–.03	–.24	–.29	–.34					
14. Product complexity	.19	.11	.10	.03	–.07	.24	–.10	–.08	.01	.02	.03	.05	.03				
15. Product importance	.11	.16	.15	.15	.09	.22	.08	.08	.02	.00	–.05	–.02	.20	.25			
16. Availability of alternatives	.08	.10	.06	.12	.25	–.05	.03	.23	.38	–.16	–.15	–.10	.00	–.19	–.05		
17. Age of relationship (years)	.13	.17	.18	.18	.13	.18	.10	.26	–.01	.06	–.16	–.08	.10	–.06	.09	–.02	

[a] Because all scales (except age of relationship) were measured with ordinal scales, caution should be used in interpreting means.

[b] The possible range for all measures was 1 to 5, except for communication frequency and supplier geographical closeness, which were 1 to 6, and age of relationship, which was an open-ended question.

[c] Reports coefficient alpha and composite reliability.

[d] Reliability and average variance extracted are not applicable for formative scales and single-item measures.

Notes. Correlations > 09 ($p < .05$), >.11 ($p < .01$).

TABLE 3
Results of LISREL Estimation and Hypothesis Tests

Independent Variables	Dependent Variables: Direct Product Costs	Dependent Variables: Acquisition Costs	Dependent Variables: Operations Costs	Dependent Variables: Expansion of Future Purchases	Hypotheses: Supported	Hypotheses: Rejected
Supplier Communications						
Frequency of face-to-face communication			–.16**		H_{2a}	
Frequency of telephone communication		.00	.11			H_{1a}, H_{2b}
Frequency of written communication		–.16**	–.15**		H_{1b}, H_{2c}	
Information sharing		–.08	.02			H_3
Supplier Accommodation of the Customer						
Supplier flexibility		–.21**	–.39*		H_4	
Relationship-specific adaptation	–.29*	–.02	.02			H_5
Characteristics of Supplier and Offering						
Supplier product quality	–.26*	–.28*	–.28*		H_{6b}, H_{6c}	H_{6a}
Geographic closeness		–.25*			H_7	
Customer Cost Management						
Active monitoring of the market	.13**	.04	.13*		H_{8c}	H_{8a}, H_{8b}
Customer Costs						
Direct product costs				–.25*	H_{9a}	
Acquisition costs				–.22*	H_{9b}	
Operations costs				–.31*	H_{9c}	
Control Variables						
Product type (equipment/finished goods)	.05	.08	.08	.01		
Availability of alternatives	–.32*	–.05	–.04	–.12		
Product importance	.11	.10	.12**	.25*		
Product complexity	–.01	–.07	–.01	–.04		
Age of supplier relationship[a]	.22*	–.02	.00	–.01		
Squared multiple correlation	.23	.44	.36	36		

*$p < .01$.
**$p < .05$ (one-tailed tests for directional hypotheses)
[a] Variable is log-transformed to attenuate kurtosis in the data

NNFI, CFI, and RMSEA compare with those of other research in this area (GFI = .88, NNFI = .87, CFI = .91, RMSEA = .068). Furthermore, the squared multiple correlations range from .23 to .44, which suggests that the factors studied explain a significant portion of the variance in costs and buyer intentions.

Results of Hypothesis Tests

H_1–H_3 predicted the effects of the frequency of different modes of communication and open sharing of information by suppliers on acquisition and operations costs. Some of these hypotheses were supported, whereas others were not. The findings provide support for the expectation that more complex operational issues at times may require the richer interaction provided in face-to-face communications but at other times may benefit from simpler written exchanges. As predicted, the more standardized issues typical of product acquisition benefit from more efficient written/electronic communication. In contrast, open information sharing by suppliers was not found to be related to a customer firm's costs. The lack of support for these hypotheses may be caused by buying firms' failure to use the information received from suppliers effectively. For example, customer firms may suffer from information overload and be unable to process and act on such information effectively.

H_4 and H_5 predicted the effects supplier accommodation would have on customer costs. The results support the prediction that greater supplier flexibility results in lower acquisition and operations costs. Contrary to the predictions of H_{5b} and H_{5c}, higher levels of relationship-specific adaptation did not lead to lower acquisition or operations costs. This may be because many of these adaptations are targeted at enhancing value through increasing the benefits a customer receives, not through cost reduction (see Wilson 1995).

Whereas H_{5a} predicted that higher direct product costs would be associated with greater supplier adaptation, the result was statistically significant in the opposite direction. Several factors may explain this unanticipated finding. First, relationship-specific adaptations may evolve into regular business practices with all customers, which may subsequently lower the cost of accommodation. For example, in the 1970s, some suppliers developed electronic data interchange (EDI) as a relationship-specific adaptation for particular customers. Over time, these procedures became more standardized and were offered to many customers, which lowered the cost to implement the procedure and the associated price. Second, buying organizations may effectively bargain away the premium prices a supplier must initially charge for customized products and services (see Kalwani and Narayandas 1995). In essence, the costs of adaptation may be shifted to suppliers. Finally, at a more general level, although our hypothesis assumed that buyers pay higher prices in exchange for relationship-specific adaptations, buyers may compensate suppliers through long-term commitments and/or promises of higher sales volume. Typically, such agreements also involve lower prices over time.

As predicted in H_7, geographic proximity of the supplier's facilities helped lower acquisition costs. For H_6, we found the expected effects of quality in lowering the customer's acquisition costs and operations costs but were surprised to find that higher-quality products had lower direct product costs.

Possible explanations for the unexpected finding for the product quality–direct product costs relationship can be drawn from a closer look at the TQM literature. It may be that quality operates as an "order qualifier" and high quality is necessary just to be considered as a supplier but does not allow a supplier to charge higher prices (Hill 1994). Another stream of the TQM literature draws a distinction between costs of conformance and costs of nonconformance (see Crosby 1979; Rust, Zahorik, and Keiningham 1994). The costs of conformance include investments to ensure that things are done right the first time. Costs of nonconformance, such as rework, downtime, scrap, warranty, and so forth, are incurred when things are not done right the first time. This literature emphasizes that over time, costs of nonconformance exceed those of conformance, and after initial investments in quality improvement, significant overall cost benefits accrue to higher-quality producers (Crosby 1979). Thus, suppliers that make investments to provide quality products for their customers may lower total costs over time and pass some of these savings on to customers through lower prices. Finally, a similar conclusion is drawn by Fine (1983), whose explanation is based on the concept of a quality-based learning curve. Fine suggests that the learning curve allowing for a reduction in costs over time is steeper for high-quality suppliers than low-quality producers. Thus, over time, suppliers of high-quality goods experience more significant cost reductions and may pass on these savings in the form of lower prices.

These explanations suggest that the negative effects of quality on direct product costs would be most likely to occur in mature supplier relationships. We tested that explanation by dividing the sample into younger and older relationships and regressing direct product costs on the exogenous variables in the model. The results show that among the relationships younger than three years, quality was not related to direct product cost, but a negative relationship was indicated among the older relationships. The results of the post hoc analysis provide tentative support for the alternative theory that over time supplier investments in quality may lead to lower supplier costs and that such savings are eventually passed on to customers in the form of lower prices.

H_8 predicted the effects of actively monitoring the supply market on each cost. More active monitoring of the supply market was found to be associated with higher operations costs (supporting H_{8c}) but not with higher acquisition costs (rejecting H_{8b}).

Contrary to H_{8a}, active monitoring of the supply market resulted in higher direct product costs. A closer examination of the results indicates that a more competitive supply market with more alternatives available (a control variable) results in lower prices. Apparently, the presence of competition is enough to keep prices lower, but actively fostering more competition through the use of bidding and/or keeping many suppliers results in higher prices. On further review, this finding appears to reflect current practices in procurement. Suppliers often give customers lower prices if the customer agrees to give the supplier a larger share of the business, enters into a sole sourcing arrangement, and/or agrees not to actively send the product out to bid. Supplier firms benefit from the stability and guaranteed volume and therefore will sacrifice price. Thus, suppliers give lower prices when buyers agree not to actively monitor the market. These findings suggest that additional research is needed to understand more fully how actively monitoring the supply market is related to direct product costs. Together, these findings bring into question the value of the traditional method of promoting competition in the market through competitive bidding and relying on many suppliers.

The results support H_9, which predicts that lowering the customer firm's direct product, acquisition, and operations costs leads the customer to expand its business with the supplier. These findings suggest that a supplier's efforts to lower a customer firm's costs can have long-term benefits to suppliers as well.

Test of Mediating Versus Direct Effects

The model developed and explicitly tested in this research assumes that the three types of costs mediate the relationship between the supplier's behaviors and characteristics and the customer's intentions to expand business with the supplier. An alternative specification of the model might predict that the exogenous constructs also directly affect the customer's purchase intentions.

The alternative specification can be tested through a series of chi-square difference tests. These one-degree-of-freedom tests compare the improvement in the model's fit when the respecified model frees a path from the exogenous construct directly to the customer's intention to expand business. Of the nine exogenous variables, model fit was improved by adding only two direct effects. The results suggest that a respecification of the model to include direct paths from information sharing ($\chi^2_{\text{diff}(1)} = 5.8$, $p < .05$) and supplier product quality ($\chi^2_{\text{diff}(1)} = 5.2$, $p < .05$) to customer intention improved fit.

For information sharing, which was not found to be related to any of the costs, the results suggest that open sharing of information is considered important by customers in that it drives future purchase behavior, but it does not affect customer costs. Although the results suggest adding a direct path from product quality to purchase intentions, adding this path did not change the statistical significance of the paths through the types of costs. Thus, the results indicate that the effects of supplier product quality on the customer's intentions to expand business are both direct and mediated by their effects on a customer's costs.

Discussion

Our results afford important insights for the theory and practice of business marketing and procurement. They clearly indicate that a supplier organization, a supplier's products and services, and the nature of the buying firm's relationship with its suppliers can help lower a customer firm's costs. The ability to enhance value in the value chain—and leverage supplier relationships to lower total costs—can be a source of competitive advantage for manufacturing organizations.

Implications for Theory Development

This research points to the need for an integrated theory to explain how buyer–supplier relationships may affect customer and supplier costs. Although several different theoretical perspectives from a variety of disciplines address specific aspects of this subject, the field lacks adequate organizational theory to address these critical business issues fully. Recently, marketing scholars have directed increased attention to understanding particular dimensions of cost management (see Dahlstrom and Nygaard 1999; Kalwani and Narayandas 1995; Noordewier, John, and Nevin 1990). By reviewing the literature, developing a model, and identifying key antecedents and consequences of customer costs, we provide another step toward more completely understanding this topic. Further research might build on this study and others to provide a more complete understanding and eventually an integrated theory that provides better insights into cost management and relationship marketing.

In drawing on the literature from different disciplines, the findings provide support for some theories and challenge others. For example, consistent with Kalwani and Narayandas's (1995) work, we found that over time, selling firms may not be able to charge premium prices for customized products and services. As noted in the results section, the finding that product quality was negatively related to all three types of costs is consistent with some perspectives in this area but inconsistent with others.

The post hoc analyses suggest that the relationship life cycle stage may play an important moderating role that should be explored further in future research. Specifically, those results suggest that the age of a relationship moderates the cost-saving effects of product quality and relationship-specific adaptations. Our results indicate that contrary to theoretical considerations, product quality and relationship-specific adaptations may have a cost-reducing effect in the long run. Even more generally, our results highlight the importance of studying the time dimension in relationships. It is reasonable to assume that other effects of supplier behavior on relationship features are contingent on the life cycle stage of a relationship (see Jap and Ganesan 2000).

Our research also highlights the importance of analyzing economic outcomes of close relationships with customers. Research in relationship marketing typically has used "soft" factors, such as the customer's satisfaction or commitment, to model performance outcomes of relationship marketing. Our research demonstrates the value of also examining the cost-related outcomes of close relationships. Increased emphasis on such "hard" outcomes will probably lead to greater practitioner interest in research on relationship marketing.

Methodologically, our research illustrates how studies in relationship marketing can be based on international data sets. Most empirical research in relationship marketing has been based on data collected in the United States. Hypothesis testing with international data is a valuable contribution to theory development.

Implications for Relationship Management Practice

Our findings have several important implications for the management of buyer–supplier relationships in industrial markets. For business marketers, the findings provide insight on how to move away from pure price-based competition. A common complaint among industrial marketers is, "Our product is a commodity—customers decide solely on the basis of price." Our research clearly indicates that selling firms can contribute significantly to lowering the customer's total costs. Focusing on such issues in interactions with customers moves attention away from the direct product costs, thus reducing the customer's price sensitivity.

Successfully applying a cost-related approach to business-to-business marketing requires specific training of salespeople. Industrial salespeople typically are trained in selling behavior and explaining technical product features. Our results show that industrial selling can benefit greatly from having salespeople who are trained in cost analysis. Salespeople who have a thorough understanding of the customer's operations and the way the costs are influenced by the supplier's products and customer interactions are needed in order to move away from pure price competition.

These results indicate that communication plays a role in lowering acquisition costs. They suggest the need to have a structure in place that fosters frequent communication between buyers and suppliers. The two parties should determine the type of information that is useful and establish formal and informal channels for exchanging it. Both manufacturers and their suppliers might develop ad hoc or permanent teams for that purpose.

Industrial marketers should also analyze whether the compensation systems used for salespeople reward their contribution to lower customer costs, which usually requires a long-term perspective. Reward systems based exclusively on short-term financial performance certainly discourage such long-term orientation.

Limitations and Directions for Further Research

Because this research involved examining only a limited set of costs and factors that might influence those costs, our results do not reflect all possible costs or cost-reduction factors. For example, although the supplier's sharing of confidential information was included in the model, the study does not explore how more open information sharing by customers might affect costs.

Although the study uses measures of customer dependence to control for the possibility that a powerful buyer could force suppliers to absorb costs—moving costs upstream and not out of the supply chain—this study cannot determine how costs may be shifted to other members of the value chain. Further research could take a broader look across multiple parties in the supply chain.

Theory provides insights about the direction of causality in our model, but rival theories exist and should be studied in further research. For example, the intention to expand purchases from a particular supplier may motivate a supplier and customer to increase communication frequency. Further research might be designed to provide specific tests of the direction of causality.

We used perceptual measures of costs. Further research might relate the independent variables in our study (and others) to objective cost measures. We do not expect that such analysis would lead to substantially new insights about the nature of relationships, but it might provide more specific results on the magnitude of cost savings associated with specific types of supplier behavior and identify specific tradeoffs across types of costs.

Finally, cost reduction is only one source of value in business relationships. A more comprehensive theory would consider costs and benefits beyond economic costs. Further research should examine other benefits, including controlling the direction of an industry, learning about new technology or new markets, or accelerating time to market for new products and services.

Conclusion

Ultimately, the continuation of the trend toward more collaborative business relationships will be based on the ability of such relationships to generate demonstrable value to the participants. Although value can be created in many ways, one of the primary and most practical objectives is to lower total cost in the value chain. Effective cost management provides firms with a significant source of competitive advantage, and several emerging business marketing practices aim to lower total system costs (e.g., supply chain management, efficient consumer response, quick response, just-in-time inventory management). As researchers develop models for better understanding value creation, theory will need to draw on a variety of perspectives to create a more complete picture of how reduction of total costs can be accomplished.

APPENDIX
Measures, Sources, and Item Reliability for Theoretical and Control Measures

A: Theoretical Measures: Scale Name, Response Cue, Source (If Any), Individual Items	Item Reliability[a]
Frequency of face-to-face communication: About how often does your firm interact with ... (once per day or more, 1–4 times per week, 1–3 times per month, 4–10 times per year, 2–5 times per year, once per year or less (influenced by Mohr, Fisher, and Nevin 1996)	
this supplier's salesperson face-to-face?	
this supplier's service/support personnel face-to-face?	
other people from this supplier face-to-face?	
Frequency of telephone communication: About how often does your firm interact with ... (once per day or more, 1–4 times per week, 1–3 times per month, 4–10 times per year, 2–5 times per year, once per year or less (influenced by Mohr, Fisher, and Nevin 1996)	
this supplier's salesperson on the phone?	
this supplier's service/support personnel on the phone?	
other people from this supplier on the phone?	
Frequency of written communication: About how often does your firm interact with ... (once per day or more, 1–4 times per week, 1–3 times per month, 4–10 times per year, 2–5 times per year, once per year or less) (influenced by Mohr, Fisher, and Nevin 1996)	
this supplier via electronic mail or EDI?	
this supplier via fax?	
this supplier via regular mail?	
Amount of information sharing: (strongly agree–strongly disagree)	
This supplier rarely talks with us about its business strategy. (R)	.42
This supplier frequently discusses strategic issues with us.	.71
This supplier openly shares confidential information with us.	.53
Supplier flexibility: (strongly agree–strongly disagree) (adapted from Noordewier, John, and Nevin 1990)	
This supplier is flexible enough to handle unforeseen problems.	.76
This supplier handles changes well.	.71
This supplier can readily adjust its inventories to meet changes in our needs.	.42
This supplier is flexible in response to requests we make.	.71
Relationship-specific adaptations: (not at all–very much) (adapted from Cannon and Perreault 1999)	
Just for us, this supplier changed its inventory and distribution.	
Just for us, this supplier changed its marketing.	
Just for us, this supplier changed its product's features.	
Just for us, this supplier changed its personnel.	
Just for us, this supplier changed its capital equipment and tools.	
Active monitoring of the supply market: (strongly agree–strongly disagree)	
We usually get more than one bid when we purchase this product.	.56
This supplier is our sole source for this product. (R)	.50
We do not even consider other suppliers for purchases of this product. (R)	.67
We try to use multiple sources for this particular supply.	.48
We often check the price and quality of other vendors of this product.	.51
Quality of supplier's products. (strongly agree–strongly disagree) (adapted from Homburg 1998)	
This supplier's products are of high quality.	.81
This supplier often fails to meet our quality requirements. (R)	.64
We often complain about this supplier's products. (R)	.55
This supplier exceeds our quality expectations.	.34
Supplier geographic closeness to the customer: (in our state, in a nearby state, in the United States, in North America, in Europe, someplace else)[b]	
Where is the location of this supplier's nearest manufacturing plant?	
Where is the location of this supplier's nearest sales office?	
Where is the location of this supplier's nearest service personnel?	
Where is the location of this supplier's nearest distribution center?	
Where is the location of this supplier's corporate headquarters?	

APPENDIX
Continued

	Item Reliability[a]
Customer direct product costs: How do each of the following costs compare with the costs incurred in your firm's other supplier relationships? (costs are much lower, costs are the same, costs are much higher)	
Direct product costs	
Customer acquisition costs: How do each of the following costs compare with the costs incurred in your firm's other supplier relationships? (costs are much lower, costs are the same, costs are much higher)	
Inventory carrying costs	
Ordering costs	
Delivery costs	
Costs of monitoring supplier performance	
Costs of coordination and communication between your firm and this supplier	
Administrative costs	
Customer operations costs: How do each of the following costs compare with the costs incurred in your firm's other supplier relationships? (costs are much lower, costs are the same, costs are much higher)	
Manufacturing costs	
Research and development costs	
Costs of coordination within your firm	
Costs associated with downtime	
Anticipated expansion of purchases from supplier (strongly agree–strongly disagree)	
We do not expect to increase our purchases from this supplier in the future.(R)	.57
In the future, this supplier will receive a larger share of our business.	.82
We expect to expand our business with this supplier.	.87
Over the next few years, this supplier will be used more than it is now.	.86

B: Control Measures: Scale Name, Response Cue, and Individual Items	Item Reliability[a]
Product complexity: (semantic differential; respondents were referred to the main product purchased from the supplier) (based on Cannon and Perreault 1999)	
Simple–complex	.82
Complicated–uncomplicated (R)	.87
Technical–nontechnical (R)	.42
Easy to understand–difficult to understand	.56
Product importance: (semantic differential; respondents were referred to the main product purchased from the supplier) (based on Cannon and Perreault 1999)	
Important–unimportant (R)	.86
Nonessential–essential	.69
High priority–low priority (R)	.82
Significant–insignificant	.74
Availability of alternatives: (strongly agree–strongly disagree) (based on Cannon and Perreault 1999)	
Other vendors could provide what we get from this firm.	.48
This supplier almost has a monopoly for what it sells. (R)	.77
This is one of the few suppliers we could use for this product. (R)	.53
No other vendor has this supplier's capabilities. (R)	.47
Product type: The product category which best describes this [main product bought from this supplier] product is . . (eight response categories, but responses were broken into two categories: 1 = finished goods or capital equipment and 2 = other categories)	
Age of relationship: (__ years and __ months)	
About how long has your firm been buying from this supplier?	

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[a] Item reliability is not reported for single-item measures.

[b] The response cues reported are for the U S sample and were adapted to reflect a similar pattern of increasing distance for the German version.

Notes: (R) = reverse-scored items.

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Market Response to a Major Policy Change in the Marketing Mix: Learning from Procter & Gamble's Value Pricing Strategy

Much research has focused on how consumers and competitors respond to short-term changes in advertising and promotion. In contrast, the authors use Procter & Gamble's (P&G's) value pricing strategy as an opportunity to study consumer and competitor response to a major, sustained change in marketing-mix strategy. They compile data across 24 categories in which P&G has a significant market share, covering the period from 1990 to 1996, during which P&G instituted major cuts in deals and coupons and substantial increases in advertising. The authors estimate an econometric model to trace how consumers and competitors react to such changes. For the average brand, the authors find that deals and coupons increase market penetration and surprisingly have little impact on customer retention as measured by share-of-category requirements and category usage. For the average brand, advertising works primarily by increasing penetration, but its effect is weaker than that of promotion. The authors find that competitor response is related to how strongly the competitor's market share is affected by the change in marketing mix and the competitor's own response and to structural factors such as market share position and multimarket contact. The net impact of these consumer and competitor responses is a decrease in market share for the company that institutes sustained decreases in promotion coupled with increases in advertising.

In the past decade, researchers have made important advances in understanding both consumer and competitive response to advertising and promotion. Researchers have quantified consumer response to promotion in terms of brand switching, repeat purchase, stockpiling, and consumption (Ailawadi and Neslin 1998; Bell, Chiang, and Padmanabhan 1999; Gupta 1988) and investigated the extent to which advertising attracts new users and retains loyal customers (Deighton, Henderson, and Neslin 1994; Tellis 1988). In studying competitor response, researchers have assessed the role of marketing-mix elasticities (Leeflang and Wittink 1996; Putsis and Dhar 1998) and begun to unravel the game-theoretic structure of competition (Cotterill, Putsis, and Dhar 2000; Kadiyali, Vilcassim, and Chintagunta 1999).

Although these studies have enhanced the understanding of how consumers and competitors respond to advertising and promotion, they typically focus on response to short-term changes in these marketing instruments. Rarely have researchers studied the effects of major policy changes. The purpose of this article is to examine market response to a major and sustained change in advertising and promotion policy. We use Procter and Gamble's (P&G's) value pricing strategy to examine consumer and competitive response and to trace how this response ultimately affects market share. Starting in 1991–92, P&G instituted major reductions in promotion and increases in advertising in an effort to reduce operating costs and strengthen brand loyalty (Shapiro 1992). This new policy ran counter to the general trend of promotion increases at the expense of advertising that prevailed in the packaged goods industry during the 1980s and early 1990s (Donnelley Marketing Inc. 1995).

Analysis of market response to such a major policy change offers several advantages. First, it provides substantial variation in marketing-mix variables instead of week-to-week movement around a fairly stable level. This provides better estimates of the impact of marketing-mix variables. For example, Deighton, Henderson, and Neslin (1994) find that advertising attracts consumers to the brand but does not

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increase purchase probabilities among current users. They note, however, that this finding may not be applicable beyond the range of their data.

Second, the sustained policy change enables us to evaluate the effectiveness of advertising and promotion in a long-term setting. Studies based on short-term changes in advertising and promotion often find that promotion has a much stronger effect on market share than advertising does (e.g., Deighton, Henderson, and Neslin 1994; Sethuraman and Tellis 1991; Tellis 1988). However, Farris and Quelch (1987, p. 91) note that the effects of relatively minor changes in advertising are hard to detect and recommend that advertising experiments should be long enough for measurable effects to occur.

Third, the policy change also enables us to study competitor response in a long-term setting. The reaction of competitors to marketing-mix changes by a market leader depends, at least to some extent, on consumer response elasticities (Gatignon, Anderson, and Helsen 1989; Leeflang and Wittink 1996). Thus, if consumer response to sustained marketing-mix changes differs from short-term response, competitor response is likely to be different.

Fourth, researchers have recently called for studying responses to fundamental policy changes that are of strategic importance to senior management, not just the tactical changes that are made in the short run (e.g., Abeele 1994).

Fifth, that P&G is the clear leader in this setting simplifies the analysis of competitive response in that we do not need to determine first who, if anyone, is the leader (see, e.g., Kadiyali, Vilcassim, and Chintagunta 1999; Leeflang and Wittink 1996).

Finally, P&G's policy change was broad based. Our data and analysis encompass 118 brands in 24 product categories in the packaged goods industry. This should make our results more generalizable than those of other market response studies that are based on one or two product-markets.

We use the sustained policy change enacted in P&G's value pricing move to investigate three major research questions:

- What are the roles of advertising and promotion in attracting and retaining customers?
- To what extent are competitor reactions determined by market share response elasticities and structural factors versus firm-specific strategy?
- How do consumer and competitive responses combine to determine the overall effect of a sustained change in advertising and promotion on market share?

Our study is unique in integrating both consumer and competitor response to a substantial, sustained change in advertising and promotion and in doing so across a large number of brands and product categories.

The article is organized as follows: We first discuss previous work relevant to the central questions of this research and present our conceptual model for analyzing them. Next, we describe the data and provide an overview of P&G's value pricing strategy. In the following sections, we present results for consumer and competitor response and show how these responses combine to determine the overall impact on market share. Finally, we summarize our findings and discuss implications for researchers and managers.

Theoretical Background and Conceptual Model

Consumer Response

A firm's advertising and promotion policy influences its ability to attract and retain customers by inducing more of them to (1) switch to the firm's brand, (2) repeat-purchase it more often, or (3) consume larger quantities.

Brand switching. As described by Blattberg and Neslin (1990), promotions induce consumers to switch to a brand by improving short-term attitudes toward it, conditioning consumers to respond to promotions, simplifying the purchase decision, and reducing perceived risk. These theories are supported by several empirical studies showing that promotions result in a large brand-switching effect (e.g., Bell, Chiang, and Padmanabhan 1999; Gupta 1988).

Advertising can induce brand switching through either raising awareness or improving consumer attitudes (Vakratsas and Ambler 1999). Although there is ample evidence that advertising influences awareness and attitudes, there is less evidence that it exerts a significant effect on brand switching. Deighton, Henderson, and Neslin (1994) and Lodish and colleagues (1995a, b) find that advertising helps small or new brands, presumably by attracting new users.

Repeat purchasing. Three theories point to a negative relationship between promotion and repeat purchasing. First, self-perception and attribution theories suggest that steep price cuts encourage consumers to attribute their purchase of the brand to the promotion, not to underlying preferences (Dodson, Tybout, and Sternthal 1978). Second, behavioral learning theory indicates that promotions train the consumer to buy on deal rather than repeat-purchase the brand (Rothschild 1987). Third, promotion can reduce the consumer's reference price for the brand, causing "sticker shock" on the next purchase (Winer 1986).

Theoretical support also exists for a positive effect of promotions. Promotions can be used to shape brand loyalty, thus increasing repeat rates (Rothschild and Gaidis 1981). Promotions can increase repeat rates in a competitive environment, because they preempt current users from taking advantage of other brands' promotions and therefore increase purchase probabilities not only among new triers but among current users as well.

Empirical research on promotion and repeat purchasing has produced a range of findings, including a negative association (Dodson, Tybout, and Sternthal 1978), no association (Ehrenberg, Hammond, and Goodhardt 1994), and both positive and negative associations (Gedenk and Neslin 1999).

Theory regarding the role of advertising in repeat purchasing centers on attitudes and framing. Advertising enhances beliefs, thereby improving attitudes and encouraging higher repeat rates. Framing theory suggests that advertising does not immediately persuade consumers but does predispose them toward a favorable consumption experience.

Empirical evidence on the role of advertising in repeat purchasing is mixed. Deighton (1984) provides evidence for framing, and Tellis (1988) finds that advertising increases repeat purchasing. Conversely, Deighton, Henderson, and

Neslin (1994) find that advertising serves more to induce brand switching than to reinforce repeat purchasing. Lodish and colleagues' (1995a, b) findings also suggest that advertising primarily influences brand switching rather than repeat purchasing (small and new brands have more customers to attract and fewer to retain).

Consumption. Promotion can increase the consumption rate among a brand's users by inducing them to load up on the brand and then consume it faster (Ailawadi and Neslin 1998; Folkes, Martin, and Gupta 1993; Wansink and Deshpande 1994). However, promotion may also decrease consumption among a brand's users, because many of these users have bought only because of the promotion and may buy smaller sizes because of perceived risk (Blattberg and Neslin 1990, p. 49). Wansink (1994) and Wansink and Ray (1996) provide theoretical and experimental evidence that advertising can induce higher category consumption by suggesting new usage situations.

Moderators of consumer response. Researchers have found that advertising and promotion elasticities differ by brand as well as by product category. Probably the most important brand characteristic found to influence market share elasticities is brand market share: High-share brands have weaker elasticities than low-share brands (Bolton 1989; Danaher and Brodie 1999; Ghosh, Neslin, and Shoemaker 1983). Additional characteristics that have been found to influence elasticities include promotional and advertising activity, stockpilability, average purchase cycle, sales force, distribution, and advertising copy (Bell, Chiang, and Padmanabhan 1999; Bolton 1989; Gatignon 1993; Ghosh, Neslin, and Shoemaker 1983; Kaul and Wittink 1995; Litvack, Calantone, and Warshaw 1985; Narasimhan, Neslin, and Sen 1996).

Competitor Response

There are two streams of competitor response research. The micro approach studies the nature of competitive interactions in established markets using weekly or monthly data (e.g., Kadiyali, Vilcassim, and Chintagunta 1999; Leeflang and Wittink 1996; Putsis and Dhar 1998). The macro approach focuses on the response of incumbent firms to new entrants in the market (e.g., Gatignon, Anderson, and Helsen 1989; Ramaswamy, Gatignon, and Reibstein 1994; Robinson 1988; Shankar 1999). Both streams draw on the economics, industrial organization, and/or strategy literature to identify three sets of factors that influence competitor response: (1) market share elasticities, (2) structural factors, and (3) firm-specific effects.

Market share response elasticities. Economic theory posits that competitor response to a firm's change in advertising and promotion is governed by cross-elasticities (how strongly the competitor's share is affected by the firm's move) and self-elasticities (how easily the competitor can recover lost share). For example, Leeflang and Wittink (1996) show that competitors should react more strongly to preserve their market shares if their cross-elasticities are high. Although self- and cross-elasticities should determine whether a competitor reacts, the empirical literature shows that it is more difficult to predict their effect on how the competitor will react. For example, Gatignon, Anderson, and Helsen (1989), Putsis and Dhar (1998), and Shankar (1999) show that firms compete more strongly with effective weapons, that is, with variables for which they have strong self-elasticities. However, Brodie, Bonfrer, and Cutler (1996) and Leeflang and Wittink (1996) find that competitors often either overreact or underreact; Bell and Carpenter (1992) show that competitor response is different depending on the objectives sought; and Putsis and Dhar (1998) note that responses to cooperative versus competitive moves can be very different.

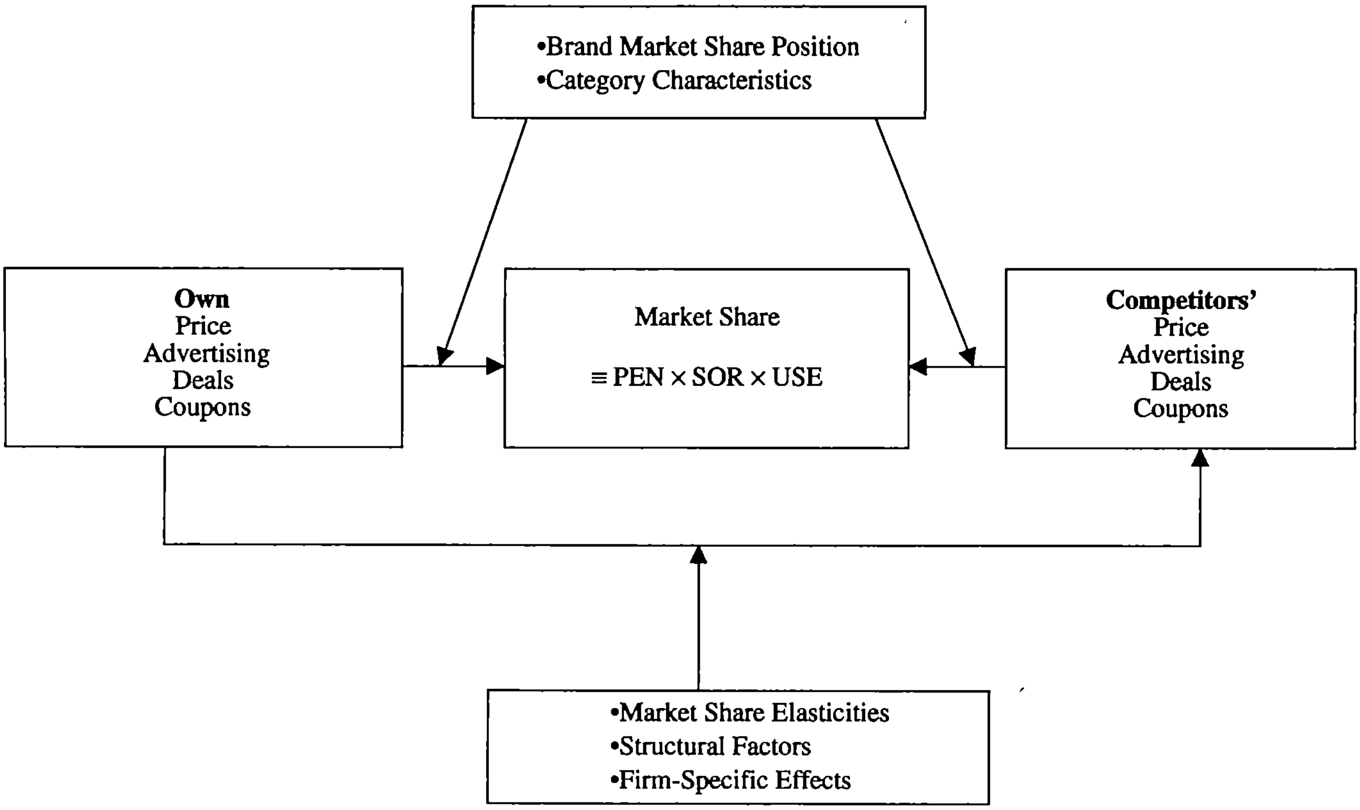
Structural factors. Industrial organization theory suggests that market structure influences competitive interaction (Scherer and Ross 1990). Concentration of the market, market share position, and multimarket contact of competitors with the initiating firm have been identified as key structural determinants of competitor response. As with elasticities, however, it is difficult to predict the direction of their influence. For example, some researchers believe that multimarket contact increases competitive rivalry (Porter 1980), whereas others argue that it leads to mutual forbearance and dampens rivalry because the competing firms have a high stake in many shared markets (Bernheim and Whinston 1990; Shankar 1999). Dominant competitors are expected to react differently from fringe firms, though it is not clear what the differences are (e.g., Putsis and Dhar 1998; Shankar 1999; Spiller and Favaro 1984). Market concentration is expected to increase cooperative behavior, because monitoring is easier, signaling is more likely to be perceived, and firms are less likely to compete away high margins (e.g., Qualls 1974; Ramaswamy, Gatignon, and Reibstein 1994; Scherer and Ross 1990).

Firm-specific effects. The resource-based view conceptualizes the firm as a unique entity with specific core competencies, leadership, culture, and resources that determine its actions (Barney 1991; Chen 1996; Collis 1991; Wernerfelt 1984). Not surprisingly, the marketing literature focuses on identifying and measuring the marketing resources of firms, such as brand equity, sales force, advertising and general marketing expertise, and market orientation (e.g., Capron and Hulland 1999). Although market share position and marketing-mix elasticities may be imperfect surrogates for resources such as brand equity and marketing expertise, other resources and competencies are unobserved or difficult to measure and are accounted for through a firm-specific effect (e.g., Boulding and Staelin 1993).

Conceptual Framework

On the basis of this literature, we have developed the framework in Figure 1 to answer our research questions. The consumer response portion of this framework decomposes market share into three components and considers the effects of own and competitive marketing mix on these components. These effects are moderated by brand and category characteristics. The competitive response portion posits that market share elasticities, structural factors, and firm-specific effects determine competitor reaction. Finally, the net impact of a policy change by a brand comes both directly, from consumer response to the brand's own policy change, and indi-

FIGURE 1
Conceptual Framework



rectly, through competitors' reactions to the policy change and consumers' response to the competitors' reactions.

Decomposition of market share. Market share, the central focus of our study, is the product of three components: penetration (PEN), share-of-category-requirements (SOR), and category usage (USE). These three components correspond to brand switching, repeat purchasing, and consumption effects, respectively, as the means by which advertising and promotion attract and retain customers. We define PEN as the proportion of category users who purchase the brand at least once, SOR as the proportion of the brand's customers' category purchases accounted for by the brand, and USE as the average category purchase volume of the brand's customers compared with the average category purchases of all households buying the category. Market share equals PEN × SOR × USE.[1] For example, assume that P&G is purchased by 55% of all bar soap buyers. Buyers of P&G are somewhat heavier users of bar soap. Their use of the category is 1.30 times that of the average category user. Only 49% of their bar soap purchases are accounted for by P&G, so they are not very loyal to P&G. Therefore, P&G's share in the bar soap category is .55 (PEN) × 1.30 (USE) × .49 (SOR), which is .3504, or 35.04% market share.

The component PEN is a measure of customer attraction, because it reflects what proportion of category users are attracted to the brand at least once; SOR is a measure of customer retention, because it reflects how much of the brand consumers buy after they have purchased it an initial time. Practitioners use SOR as a measure of brand health, even loyalty (Bhattacharya et al. 1996; Hume 1992;

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[1] To examine this algebraically, let

S_B = unit brand sales,
S_C = unit category sales,
MS = market share of the brand,
N_C = number of households that buy the category,
N_B = number of households that buy the brand,
C_C = average category unit sales per household that buys the category, and
C_B = average category unit sales per household that buys the brand.

Then,

$$S_C = N_C \times C_C,$$
$$MS = S_B/S_C,$$
$$PEN = N_B/N_C,$$
$$SOR = S_B/(N_B \times C_B),$$
$$USE = C_B/C_C, \text{ and}$$
$$PEN \times SOR \times USE = (N_B/N_C) \times [S_B/(N_B \times C_B)] \times (C_B/C_C) = [S_B/(N_C \times C_C)] = (S_B/S_C) = MS.$$

Kristofferson and Lal 1996a, b). This measure reflects how well the brand retains its customers and is particularly relevant in the context of P&G's value pricing strategy, because one of the stated goals of the strategy is to improve customer loyalty.

Effect of advertising and promotion. Our theoretical discussion suggests that both advertising and promotion should increase PEN by encouraging more consumers to switch to the brand, though previous empirical research suggests that the advertising effect is much weaker than the promotion effect. Advertising should have a positive effect on SOR, because it should enhance repeat purchasing. Promotion could have a negative or a positive effect on SOR. Advertising should have a positive effect on USE to the extent that it suggests new product uses. Promotion could have a negative or positive effect, depending on whether it creates new usage occasions and increases the consumption rate or brings in consumers who purchase smaller quantities to mitigate perceived risk.

Moderators of advertising and promotion effects. Consumer response elasticities differ systematically from category to category and brand to brand. These cross-sectional differences are not of direct interest for our research, but we must control for them to obtain valid estimates on average. We allow market share position, stockpilability, purchase cycle, deal intensity, and advertising intensity to moderate self- and cross-elasticities in the consumer response model. Although we do not have data on all possible moderators (e.g., advertising copy), the consumer response research cited previously suggests that the factors we include explain a significant portion of cross-sectional variation in elasticities.

Competitor response. Competitor response also differs from category to category and brand to brand. It is moderated by market share elasticities and the structural and firm-specific factors suggested in the literature. Because market share elasticities are estimated in the consumer response model, there is an important link between consumer response and competitor response. The structural factors are market concentration, market share position, and multimarket contact. Firm-specific factors over and above these are represented by dummy variables.[2]

Method

Data

We study changes in the market between 1990 and 1996. In 1991, P&G introduced its value pricing program and implemented it over multiple years (Kristofferson and Lal 1996a, b; Shapiro 1992), and we look at the market before, during, and after implementation of the strategy. Our data are primarily from Information Resources Inc.'s (IRI's) annual *Marketing Fact Book.* We select 24 product categories in which P&G participates and compile data on price, promotion frequency and depth, market share, PEN, SOR, and USE for several brands in each category. Whenever possible, we include P&G, three of its largest competitors, and at least one small competitor. The analysis is at the level of a manufacturer within a product category. That is, for a manufacturer with more than one brand within a product category, we combine the brands into one umbrella brand.[3] This results in data on 118 brands across the 24 product categories, though data for some brands are missing for one or more of the seven years. The advertising data are compiled from the *Leading National Advertisers* publication of annual media advertising. All the moderators in the consumer and competitor response models are derived from these data, with the exception of category stockpilability, which we obtain from Narasimhan, Neslin, and Sen (1996). In Appendix A, we define all the variables, and in Appendix B, we list the 24 product categories.

We note that our data reflect changes observed at the retail level, so we cannot separately measure the change in P&G's strategy toward the trade and the consequent change in strategy of the trade. Also, these data represent activity only in U.S. grocery stores and therefore do not speak to changes in other countries or in other channels such as mass merchandisers. However, the *Marketing Fact Book* covers a large number of packaged goods product categories and markets and has been used to gain important insights by researchers such as Fader and Lodish (1990) and Lal and Padmanabhan (1995). Our compilation is particularly valuable because we cover a period of seven years, include most of the product categories in which P&G plays a role, and augment the *Marketing Fact Book* data with media advertising data.

These data enable us to undertake a broad-based pooled time series, cross-sectional analysis. This is a well-established approach in the econometric literature (Hsiao 1986) that has produced several important articles in the marketing literature (e.g., Boulding, Lee, and Staelin 1994; Boulding and Staelin 1990, 1993; Hagerty, Carman, and Russell 1988; Jacobson 1990; Jacobson and Aaker 1985). The advantage of this approach is that it enables broad and generalizable analyses that span several brands, categories, or industries. The challenge is to control for cross-sectional differences so that they are not confounded with longitudinal effects. We model changes over time to control for cross-sectional main effects, and we incorporate moderators of both consumer and competitor response to control for cross-sectional interaction effects.

Value Pricing: An Overview

In Table 1, we present the average percent changes in price, advertising, and promotion made by P&G and its competitors between 1990 and 1996 across the 24 product categories. In

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[2] We do not include structural or firm-specific variables other than market share position as moderators in the consumer response model because they are not relevant to consumers. For example, consumers would not be expected to react differently to a given brand's advertising because that brand competes with another brand in multiple markets.

[3] This is consistent with the emphasis of packaged goods manufacturers on category management and with the strategic emphasis of our research. It enables us to assess a firm's category performance as a function of its advertising and promotion policy in that category.

Figure 2, we depict percent changes each year indexed to their values in 1990, which serves as the base year.

Did P&G's publicized policy change affect retail activity? The answer to this is a clear yes. P&G increased advertising expenditures in the neighborhood of 20% over the seven years. It also reduced promotion activities: Deal frequency declined 15.7% and coupon frequency declined 54.3%. As a result of the cuts in P&G's promotion, the net price paid by consumers increased by approximately 20%. Figure 2 also shows that these changes occurred gradually over several years, though price and deals had stabilized by 1995–96.

How did competitors respond? For advertising and coupons, they followed P&G directionally but not completely, and for deals, they did not follow P&G at all. Competitor advertising increased, but only by 6.2%; coupon frequency decreased, but only by 17.3%; and deal frequency increased by 12.6%. As a result, the net price paid by consumers for competitor brands increased, but only by 8.4%. Overall, then, competitors only partly went along with P&G's policy change. Table 1 shows the significant differences in the reactions of different companies. Colgate and Gillette were more competitive than Unilever.[4] Both companies strongly increased advertising and promotion. Unilever, in contrast, cut coupons while instituting small increases in advertising and deals. We examine subsequently how much of this difference in reaction across competitors is due to economic and structural factors and how much to firm-specific effects.

What was the net consequence of the strategy change and competitive reaction for P&G's market share? Our data show that during this period, P&G lost approximately 18% of its share on average across these 24 categories (approximately five points per category). In line with changes in the marketing-mix variables, this share loss occurred gradually over several years and stabilized somewhat during 1995–96.

Although this overview provides a broad picture of P&G's initiative, our purpose is to gain an in-depth understanding of the market response to the policy change. In the next two sections, we estimate econometric models of consumer and competitor response that enable us to examine not just what happened but also why it happened. Specifically, we are able to (1) quantify the individual effects of advertising and promotion on penetration, share of requirements, and category usage; (2) account for differences across brands and categories; (3) determine the role of elasticities and structural and firm-specific factors in competitive response; and (4) attribute the total impact on P&G's market share to changes in each of its own marketing-mix variables and to competitors' reactions.

FIGURE 2
Overview of Value Pricing

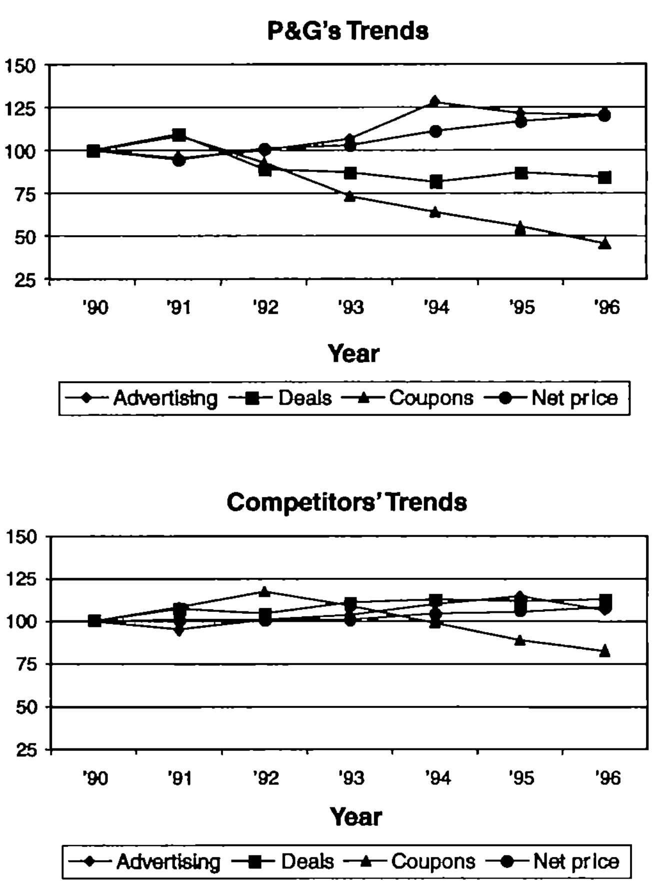

TABLE 1
Value Pricing: An Overview

	Percent Change in Average from 1990 to 1996 for				
Marketing Mix Variable	**P&G**	**All Competition**	**Colgate**	**Unilever**	**Gillette**
Advertising	+20.7%	+6.2%	+67.3%	+9.0%	+68.8%
Deals	−15.7%	+12.6%	+39.7%	+2.2%	+11.5%
Coupons	−54.3%	−17.3%	+24.0%	−32.0%	+127.8%
Net price	+20.4%	+8.4%	+2.5%	+11.5%	−7.7%

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[4] We refer to price decreases and advertising, deal, and coupon increases as competitive because these actions are intended to take share away from P&G. Analogously, we refer to price increases and advertising, deal, and coupon cuts as cooperative. This terminology takes into account the inherent asymmetry noted by Ramaswamy, Gatignon, and Reibstein (1994) and Putsis and Dhar (1998), who point out, for example, that following a price increase may be cooperative but following a price decrease is not.

The Consumer Response Model

Model Specification

We model market share as a multiplicative function of marketing-mix variables, similar to Wittink and colleagues (1987) and Leeflang and Wittink (1996). Specifically,

$$\text{(1) } \text{Share}_{ict} = e^{\alpha}\left(\text{Price}_{ict}^{\beta_{1ic}}\right)\left(\text{Advt}_{ict}^{\beta_{2ic}}\right)\left(\text{Deal}_{ict}^{\beta_{3ic}}\right)\left(\text{Coup}_{ict}^{\beta_{4ic}}\right)$$

$$\left(\overline{\text{Price}}_{ict}^{\beta_{5ic}}\right)\left(\overline{\text{Advt}}_{ict}^{\beta_{6ic}}\right)\left(\overline{\text{Deal}}_{ict}^{\beta_{7ic}}\right)\left(\overline{\text{Coup}}_{ict}^{\beta_{8ic}}\right)e^{\varepsilon_{ict}},$$

where

Share_{ict} = market share of brand i in category c in year t relative to 1990,
Price_{ict} = net price paid per unit volume for brand i in category c in year t relative to 1990,
Advt_{ict} = advertising (in tens of millions of dollars) for brand i in category c in year t relative to 1990,
Deal_{ict} = percentage of total sales of brand i in category c sold on deal in year t relative to 1990,
Coup_{ict} = percentage of total sales of brand i in category c sold with manufacturer's coupons in year t relative to 1990,
$\overline{\text{Price}}_{ict}$ = average (volume-weighted) Price of brand i's competitors in category c in year t relative to 1990,
$\overline{\text{Advt}}_{ict}$ = average (volume-weighted) Advt of brand i's competitors in category c in year t relative to 1990,
$\overline{\text{Deal}}_{ict}$ = average (volume-weighted) Deal of brand i's competitors in category c in year t relative to 1990, and
$\overline{\text{Coup}}_{ict}$ = average (volume-weighted) Coup of brand i's competitors in category c in year t relative to 1990.

Note that the dependent and independent variables in the model are ratios with respect to the base year, 1990.[5] This indexing is similar in spirit to Wittink and colleagues' (1987) and controls for brand-specific main effects. As discussed previously, market share position and four category characteristics moderate consumer response elasticities, so different brands in different categories have their own elasticities, even though data for all categories and brands are pooled to estimate the model. This results in a process function for elasticities (Gatignon 1993):

$$\text{(2) } \beta_{kic} = \beta_{k0} + \beta_{k1}\text{Small}_{ic} + \beta_{k2}\text{Mid}_{ic} + \beta_{k3}\text{AvgDeal}_{c}$$

$$+ \beta_{k4}\text{AvgAdvtg}_{c} + \beta_{k5}\text{AvgCycle}_{c} + \beta_{k6}\text{Stock}_{c},$$

where

β_{kic} = elasticity for variable k in Equation 1 for brand i of category c;
Small_{ic} = 1 if brand i in category c accounts for less than 5% of the sales of the top three brands in the category in 1990, 0 otherwise;[6]
Mid_{ic} = 1 if brand i in category c accounts for 5% to 40% of the sales of the top three brands in the category in 1990, 0 otherwise;
AvgDeal_{c} = average percentage sold on deal in category c;
AvgAdvtg_{c} = average advertising expenditure in category c;
AvgCycle_{c} = average length of purchase cycle for category c; and
Stock_{c} = Stockpilability of category c.

We take logarithms of both sides and estimate the following log-linear model using ordinary least squares (OLS):[7]

$$\text{(3) } \log\left(\text{Share}_{ict}\right) = \alpha + \left(\beta_{10} + \beta_{11}\text{Small}_{ic} + \ldots + \beta_{16}\text{Stock}_{c}\right)$$

$$\log\left(\text{Price}_{ict}\right) + \ldots + \left(\beta_{80} + \beta_{81}\text{Small}_{ic} + \ldots + \beta_{86}\text{Stock}_{c}\right)$$

$$\log\left(\overline{\text{Coup}}_{ict}\right) + \varepsilon_{ict}.$$

We estimate this consumer response model using market share as well as the three components of market share, PEN, SOR, and USE, as dependent variables. Given the definitional identity relating market share to PEN, SOR, and USE, each coefficient estimate in the market share model equals the sum of the corresponding coefficient estimates from the models for the three components (see Farris, Parry, and Ailawadi 1992). As a result, the market share elasticity with respect to advertising equals the penetration elasticity with respect to advertising plus the SOR elasticity plus the USE elasticity.

Results

In Table 2, we summarize the fit of the consumer response model for market share and its three components. Adjusted R^2s are quite strong, showing that changes in the marketing mix are significantly related to changes in market share and

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[5] When data are missing for 1990, we use 1991 as the base year.

[6] We use a three-part classification of market share position (small, middle, and high) to allow for nonlinear or nonmonotonic relationships between market share and consumer response. We include dummy variables for small and middle; high is the omitted category. In our sample, the lowest quartile of market share relative to the top three brands is approximately 7%, and the highest quartile is approximately 38%. We use slightly more extreme cutoffs of 5% and 40% to separate the really small/fringe and really big/powerful brands from the majority in the middle.

[7] We correct for serial correction that may be caused by indexing to a base year and find that the estimated elasticities are not substantively different from those obtained using OLS. We thank Vithala Rao for bringing the serial correlation issue to our attention. We also estimate the consumer response model using lagged values of the independent variables as instruments to control for possible simultaneity and again find few substantive differences in estimated elasticities. Therefore, we report the OLS results here for simplicity.

TABLE 2
Consumer Response Model: Summary (569 observations)

Statistic	Number of Coefficients	Dependent Variable PEN	 USE	 SOR	 Share
Adjusted R^2 for full model	56	.447	.354	.430	.435
F-statistic for full model	56	9.19*	6.55*	8.64*	8.82*
F-statistic for category characteristics	32	4.31*	2.97*	6.73*	3.48*
F-statistic for brand market share position	16	9.51*	5.59*	6.05*	10.81*

*$p < .01$.

its components. Furthermore, the F-tests show that both brand and category characteristics have a significant influence on consumer response.[8]

In Table 3, we present estimated elasticities for the average brand, which suggest that

- Price paid is negatively associated with market share, primarily through SOR and USE. That is, lower prices enhance SOR and USE. Because our price variable is net price paid, this effect includes the impact of promotional price cuts.
- Deals and coupons have similar share elasticities, exerted mostly through PEN. Both elasticities are fairly strong even though they represent just the signaling aspect of promotions (the impact of price cuts themselves is included in the price variable).[9]
- The overall effect of promotion includes the signaling effect captured by the deal and coupon variables, plus the price effect captured by the price variable. Examining how these effects combine, we conclude that promotion clearly increases PEN, because the signs of the deal and coupon variables are positive and the sign of the price variable is negative (meaning that price cuts increase penetration). For SOR and USE, the signs of the deal and coupon variables are negative, but the signs of the price variable are also negative (meaning that the price cuts associated with deals would increase SOR and USE). Even though the price coefficients are much larger than the deal coefficients, these balance out to mean that promotion has little effect on SOR and USE. This is because a fairly large percentage increase in deal frequency decreases net price paid by only a small percentage.[10]
- Advertising has a relatively weak relationship with market share. Its biggest association is with PEN, but it has little association with SOR.[11]

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[8] Although the multiplicative model does not force market share predictions to lie between 0 and 100%, there are no instances in our sample either of negative predicted market share or of market shares within a category summing to more than 100%.

[9] We also estimate the model using regular price, calculated as shown in Appendix A. As might be expected, price elasticities are weaker and deal and coupon elasticities are stronger in that model. We report the results on the basis of net price to be consistent with most other scanner data–based studies (e.g., Bucklin and Lattin 1991; Chintagunta 1992, 1993; Fader and Lodish 1990; Mela, Gupta, and Lehmann 1997); also, overall model fit is better with net price.

[10] For example, consider a brand with a regular price of $2 and a promotion price of $1.40. Currently, 70% of purchases are at regular price, and 30% are at the deal price. This yields a current net price paid of $1.82. Consider an increase in deal frequency, so that now 40% of purchases will be at the deal price. This is a 33.3% increase in the deal variable. The average price paid will then be $1.76, a 3.3% decrease in the price variable Assuming the average elasticities as in Table 3, the new SOR compared with the current SOR will be $(.967)^{-.266} \times (1.333)^{-.053} = .9937$, a marginal .63% decrease in SOR.

[11] We estimate a model with current as well as lagged effects of all advertising variables (main and interaction effects) to test for carryover effects of advertising and cannot reject the null hypothesis that all lagged coefficients are zero. These results are consistent with those of Lodish and colleagues (1995a), who find that if advertising does not have an effect in the first year, it does not have any effect in subsequent years either.

TABLE 3
Average Market Share Elasticities of Sample[a]

Independent Variable	Average Elasticities for PEN	 USE	 SOR	 Share
Price	–.065	–.210	–.266	–.541
Advertising	.044	.005	–.010	.039
Deals	.162	–.017	–.053	.092
Coupons	.133	–.001	–.007	.125
Competitor price	–.027	.128	.665	.766
Competitor advertising	–.065	–.003	–.059	–.127
Competitor deals	–.106	.063	–.081	–.124
Competitor coupons	–.116	.035	–.124	–.205

[a] Averaged across 118 brands in 24 categories.

- Competitive price cuts lead to lower share, mostly through a negative impact on SOR.
- Competitive advertising is associated with lower market share through PEN and SOR. In other words, competitive advertising makes it more difficult to attract and retain customers.
- Competitive deals and coupons are also associated with lower market share, largely through PEN and SOR.

Elasticities vary for different brands in different product categories, as would be expected from the significant impact of brand and category characteristics shown in Table 2. For example, the market share model estimates in Table 4 show that heavily advertised categories are less price elastic, consistent with the role of advertising in product differentiation (e.g., Ghosh, Neslin, and Shoemaker 1983; Kaul and Wittink 1995). They are also less advertising elastic, consistent with a saturation effect (e.g., Bolton 1989). Similarly, heavily promoted categories are less deal and coupon elastic, also consistent with a saturation effect. And categories with long purchase cycles are less deal elastic, consistent with the findings of Narasimhan, Neslin, and Sen (1996), but more advertising elastic. In terms of brand differences, small brands have the strongest advertising elasticities, consistent with prior work by Deighton, Henderson, and Neslin (1994), Lodish and colleagues (1995a), and Batra and colleagues (1995). They are also the most vulnerable to competitive price cuts and advertising, consistent with the literature on asymmetric effects (e.g., Blattberg and Wisniewski 1989). Large brands have the strongest promotion (both deal and coupon) elasticities. Table 5 provides mean elasticities for small, mid-sized, and large brands in our sample.

Validation with Disaggregate Data

Although these findings are consistent with the theoretical and empirical literature, they are based on aggregate data. To ensure that our results are not an artifact of category or temporal aggregation, we validate our market share model with more disaggregate data. Specifically, we compile quarterly market share, price, and promotion data over the 1990–96 period for 26 brands in six product categories from a data set on the Chicago stores of the Dominick's grocery chain. The product categories are automatic dishwasher detergent, dishwashing liquid, laundry detergent (powder and liquid combined), toilet tissue, toothpaste, and toothbrushes. We obtain quarterly advertising data from *Leading National Advertisers*. Although the advertising data are national, there is no reason to believe that changes in the

TABLE 4
Estimates of Market Share Response Model

		Interaction With					
Marketing-Mix Variable	**Main Effect**	**Small Brands**	**Mid-Sized Brands**	**Category Advertising**	**Category Deals**	**Stockpiling**	**Purchase Cycle**
Own price	.327	−.230	.033	.133***	−.010	1.281**	−.012
Own advertising	−.289**	.141*	.039	−.014***	.001	−.074**	.003**
Own deal	2.099*	−.236	−.270***	.147*	−.018*	−.011	−.016*
Own coupon	.373***	−.266*	−.143**	.024*	−.005**	.253*	−.000
Competitive price	−1.036	3.169*	−.186	−.319*	.021	−1.042	.014
Competitive advertising	.357	−.428*	−.026	.021	−.002	−.065	−.004
Competitive deal	−.507	.606**	−.090	.005	.001	−.291	.004
Competitive coupon	−.473	−.311*	.108	.038	.002	−.382*	.003

$^{*}p < .01$.
$^{**}p < .05$.
$^{***}p < .10$.

TABLE 5
Average Market Share Elasticities by Size of Brand

	Average Market Share Elasticities for		
Independent Variable	**Small Brands**	**Mid-Sized Brands**	**Large Brands**
Own price	−.696	−.481	−.517
Own advertising	.117	.024	−.017
Own deals	.078	.018	.327
Own coupons	−.001	.132	.266
Competitive price	3.220	−.061	.058
Competitive advertising	−.428	−.038	−.001
Competitive deals	.377	−.312	−.210
Competitive coupons	−.500	−.090	−.166

Chicago market would be systematically different from nationwide changes.

To allay concerns about aggregation over time, brands, and categories, we estimate our multiplicative market share model separately for each brand in each category instead of pooling data across brands and categories and using moderators. Thus, we obtain 26 sets of elasticity estimates. As Table 6 shows, the pattern of elasticities from this disaggregate analysis is consistent with those obtained from the aggregate analysis. Overall, price elasticities are the strongest, followed by promotion elasticities, whereas advertising elasticities are quite weak. A comparison of Table 6 with Table 5 shows that differences in elasticities among small, mid-sized, and large brands are also similar to the aggregate results. Small brands have the strongest advertising elasticities and are the most vulnerable to competitive price cuts and advertising.[12] In summary, this disaggregate analysis corroborates the findings from our aggregate data, suggesting that the latter are not an artifact of aggregation.

Competitive Reactions

Model Specification

The competitive response model consists of four equations, one for each of the four marketing-mix variables. The dependent variable in each equation is the change in the marketing-mix variable of a given P&G competitor from the base year to the current period.[13] As discussed previously, competitor response should depend on how strongly P&G's strategy change affects the market share of the competitor. Therefore, we model competitive marketing-mix reaction, Mmixchg, as a function of Shreff, the predicted effect that P&G's strategy change would have on the competitor's market share if the competitor does not change its strategy:[14]

$$\text{(4)} \qquad \text{Mmixchg}_{kict} = \alpha_k + \beta_k \text{Shreff}_{ict} + \varepsilon_{kict}.$$

We model predicted share change on the basis of the four marketing-mix variables:

$$\text{(5)} \qquad \text{Shreff}_{ict} = \text{Share}_{ic90}\Big[\big(\text{Cross}_{\text{price}\ ic}\big)\big(\Delta\overline{\text{Price}}_{ict}\big) + \big(\text{Cross}_{\text{advtg}\ ic}\big)\big(\Delta\overline{\text{Advt}}_{ict}\big) + \big(\text{Cross}_{\text{deal}\ ic}\big)\big(\Delta\overline{\text{Deal}}_{ict}\big) + \big(\text{Cross}_{\text{coupon}\ ic}\big)\big(\Delta\overline{\text{Coup}}_{ict}\big)\Big],$$

where

Mmixchg_{kict} = change in marketing-mix variable k for brand i in category c in year t relative to 1990;

Shreff_{ict} = predicted number of share points by which the market share of brand i in category c would change in year t relative to 1990 as a result of P&G's strategy change if there is no reaction;

Share_{ic90} = market share of brand i in category c in the base year 1990;

Cross_{kic} = cross-elasticity of brand i in category c with respect to variable k estimated in the market share response model; and

$\Delta\overline{\text{Price}}_{ict}$ = percent change in the average (volume-weighted) Price of brand i's competitors in category c from 1990 to year t, assuming P&G's actual change in price

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[12] We also estimate the basic multiplicative competitive interaction attraction model (Cooper and Nakanishi 1988) for each category and find that the estimated elasticities are generally consistent with those from the multiplicative model.

[13] We index competitive reaction to the base year (1990) for the same reason as in the consumer response model. Furthermore, we consider magnitude changes in a linear model rather than percent changes in a log-linear model because the fit of the former is significantly better for the advertising and coupon equations.

[14] Shreff combines the impact of all four of P&G's marketing-mix variables. We do not model reaction to each of P&G's marketing-mix variables separately because there is strong multicollinearity among them. One option is to follow other researchers and model reactions only in kind (e.g., model competitive price changes as a function of P&G's price alone, not its other marketing-mix variables). We believe that combining the impact of all P&G's mix variables into a single Shreff variable is a better alternative, because reactions may not occur only in kind (e.g., Leeflang and Wittink 1992, 1996).

TABLE 6
Market Share Elasticities: Disaggregate Data

	Mean Value for			
Elasticity	**Entire Sample**	**Small Brands**	**Mid-Sized Brands**	**Large Brands**
Own price	–1.119	–2.129	–.927	–.916
Own promotion	.139	.129	.167	.127
Own advertising	.035	.076	.034	.016
Competitive price	1.700	4.274	1.570	.617
Competitive promotion	–.143	.061	–.236	–.157
Competitive advertising	–.048	–.196	–.016	–.012

from year 1990 to year t and no change for other competitors. Analogous definitions are used for the other marketing-mix variables.

In addition, α_k represents the change in competition's marketing-mix variable k even if Shreff is zero, which reflects general trends in the market and/or an overall cooperative or competitive stance by competitors; β_k indicates how competitors change variable k in response to Shreff. A positive sign for k = Price means that competitors increase their prices as P&G's move increases their share. A negative sign means that competitors decrease their prices as P&G's move increases their share.

Because competitor response is moderated by market share elasticities, structural factors, and firm-specific effects, we allow for both intercept and slope shifts by these factors.[15] To control for other category characteristics that may moderate competitive response, we also group the categories into five broad classes—health remedies, cleaners, personal care products, paper products, and food products—and include intercept and slope dummies for them:[16]

$$
\begin{aligned}
(6)\quad \text{Mmixchg}_{kict} = {} & \alpha_{k0} + \alpha_{k1}\text{Self}_{kic} + \alpha_{k2}\text{Small}_{ic} \\
& + \alpha_{k3}\text{Mid}_{ic} + \alpha_{k4}\text{Conc}_c + \alpha_{k5}\text{Nummkt}_i \\
& + \alpha_{k6}\text{Col}_{ic} + \alpha_{k7}\text{Lev}_{ic} + \alpha_{k8}\text{Gil}_{ic} \\
& + \alpha_{k9}\text{Health}_c + \alpha_{k10}\text{Cleaner}_c + \alpha_{k11}\text{Personal}_c \\
& + \alpha_{k12}\text{Paper}_c + \big(\beta_{k1} + \beta_{k2}\text{Self}_{kic} + \beta_{k3}\text{Small}_{ic} \\
& + \beta_{k4}\text{Mid}_{ic} + \beta_{k5}\text{Conc}_c + \beta_{k6}\text{Nummkt}_i \\
& + \beta_{k7}\text{Col}_{ic} + \beta_{k8}\text{Lev}_{ic} + \beta_{k9}\text{Gil}_{ic} \\
& + \beta_{k10}\text{Health}_c + \beta_{k11}\text{Cleaner}_c + \beta_{k12}\text{Personal}_c \\
& + \beta_{k13}\text{Paper}_c\big)\text{Shreff}_{ict} + \varepsilon_{kict},
\end{aligned}
$$

where

Self_{kic} = self-elasticity of firm i in category c with respect to marketing-mix variable k, estimated from the market share response model;

Conc_c = concentration of category c, equal to market share of top three firms;

Nummkt_{ic} = number of product categories in which firm i competes with P&G;

Col_{ic} = 1 if firm i in category c is Colgate Palmolive, 0 otherwise;

Lev_{ic} = 1 if firm i in category c is Unilever, 0 otherwise;

Gil_{ic} = 1 if firm i in category c is Gillette, 0 otherwise;

Health_c = 1 if category c is a health remedy, 0 otherwise;

Cleaner_c = 1 if category c is a cleaning product, 0 otherwise;

Personal_c = 1 if category c is a personal care product, 0 otherwise; and

Paper_c = 1 if category c is a paper product, 0 otherwise.

Results

The system of four competitive reaction equations is estimated from observations on P&G's competitors in all the product categories. We use seemingly unrelated regression, because the error terms across the four equations may be correlated (Johnston and DiNardo 1997). The system-weighted R^2 for the four equations is .23.[17] In Table 7, we summarize the results of tests to determine whether market share elasticities and structural, firm-specific, and category class–specific factors have significant explanatory power. Each of these groups of factors is significant in all four competitive reaction equations, with the exception of the firm-specific effect in the advertising reaction equation. Thus, although a significant portion of competitor response is due to self- and cross-elasticities and structural factors, a significant portion is also firm-specific.

Figure 3 shows the response of the average competitor as a function of Shreff. The length of the line represents the range of Shreff in the sample. The price, advertising, and coupon intercepts being close to zero shows that competitors did not change these variables much during the period of study if they were unaffected by P&G's policy change.

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[15] To ensure that we have enough observations to estimate a company effect reliably, we include dummy variables only for companies that participate in at least five of the product categories in our study.

[16] We thank an anonymous reviewer for suggesting that we add these dummy variables.

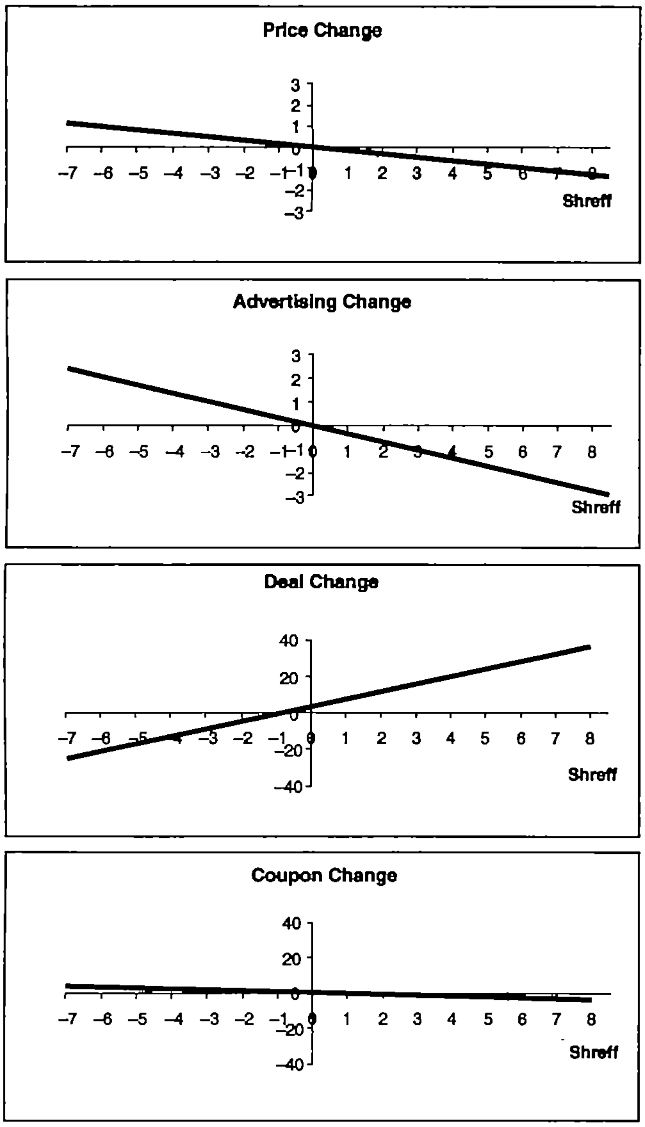
[17] We also estimate the competitive reaction model using one-year lags. There is no improvement in overall model fit, and none of the coefficient estimates changes significantly.

TABLE 7
Competitive Reaction Model: Summary (376 observations)

		Competitive Reaction Variable			
F-Statistic for Impact of		**Price**	**Advertising**	**Deals**	**Coupons**
Market share elasticities	14	4.55*	3.12*	2.54*	1.44***
Structural factors	8	4.34*	2.81*	5.59*	5.79*
Firm-specific	6	3.71*	.95	3.21*	5.47*
Category class–specific	8	6.26*	2.61*	6.32*	2.94*

*$p < .05$.
**$p < .10$.
***$p < .15$.

FIGURE 3
Average Competitive Reactions



The deal intercept, however, is strongly positive, showing that competitors generally increased deals during this period even if they were unaffected by P&G.

The nonzero slopes show that competitors generally respond depending on how strongly they are affected by P&G. Competitors are competitive on deals, increasingly so when they benefit from P&G's policy change. This is also reflected in price response: Competitors' prices decrease as they benefit from P&G's policy change. Companies appear to use price and deals to take advantage of an opportunity for increasing market share. Response on advertising and coupons is quite different. Competitors cut advertising and coupons if they benefit from P&G's policy change, perhaps using the opportunity to save money.

Table 8 shows several interesting differences in competitive response due to structural and firm-specific factors. For example, competitors that have multimarket contact with P&G tend to follow P&G's lead on price and advertising more than others when they benefit from P&G's move. Small competitors react in the opposite way, however. They reduce price and advertising more than others if they are affected positively.[18] In addition, small brands are more likely than others to increase deals when they benefit from P&G's move. These findings suggest that small brands are less likely to follow P&G's move, whereas firms with multimarket contacts are more likely to follow. Over and above the differences in response that can be accounted for by market share elasticities and structural factors, response differs by company, which lends support to the resource-based view of the firm. For example, Gillette's reactions are less related to how much it is affected by P&G's policy change than Lever and Colgate's reactions, particularly on price and advertising.

In summary, theory tells us that market share elasticities, structural factors, and firm-specific effects matter, and they do. Theory does not predict the direction of influence of these factors, and we find that there are several interesting differences in their influence across marketing-mix variables. These differences may be partly due to the initiating firm's move being cooperative on some variables (deals and coupons) and competitive on others (advertising). There may be other issues at play, however, such as the costs and profitability of various marketing-mix variables. Our research points to the need for further theory development to better understand how elasticities, structural factors, and firm-specific factors influence competitive response.

Net Impact of a Sustained Change in Advertising and Promotion Policy

Impact on Market Share

To understand the impact of the value pricing strategy on P&G's market share more fully, we use P&G's elasticities, obtained from the consumer response model, together with the changes made by P&G and the competition in each of the four marketing-mix variables, to trace formally the overall impact on the three components of P&G's market share—PEN, SOR, and USE. Table 9 suggests the following:

- On average, P&G suffered a predicted 16% loss in market share across the 24 categories in our study.[19] The decrease in share is due mainly to a predicted 17% decrease in penetration. SOR and USE are virtually unchanged. The hoped-for increase in SOR to offset the loss in penetration did not materialize.
- The loss in penetration is attributable to P&G's severe cuts in coupons and deals and the consequent increase in net price.
- The increase in net price hurt SOR and USE. The deal and coupon cuts did not increase SOR as might have been expected if cutting promotions strengthened customer loyalty.

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[18] This is partly attributable to a given share point change translating to a much larger percentage of a small brand's market share than a large brand's market share.

[19] The actual loss was 18%, so the model represents share changes pretty well.

TABLE 8
Standardized Coefficient Estimates of Competitive Reaction Model

	Dependent Variable[a]			
Independent Variable	**Price Change**	**Advertising Change**	**Deal Change**	**Coupon Change**
Self-elasticity	.181**	–.286*	.261*	.167***
Colgate	.012	–.047	.346*	.466*
Lever	.114	–.141	.231	.598*
Gillette	–.081	–.077	.170*	.386*
Small	.214*	.208***	.235*	.179***
Medium	.062	–.021	.090	.238*
Health remedies	.323*	.201**	–.438*	–.203***
Cleaners	–.004	–.179**	–.081	.201**
Personal care	–.036	.056	–.547*	.016
Paper	–.033	.014	–.200*	.050
Number of market contacts	–.081	.261	–.139	–.921*
Concentration	–.080	.012	–.052	–.120***
Shreff	–.087	–.052	1.455*	–.455
Self-elasticity × Shreff	–.405**	–.039	.081	.214
Colgate × Shreff	–.597*	–.443*	.155	–.181
Lever × Shreff	–1.114*	–.587**	.028	–.139
Gillette × Shreff	–.008	–.003	.011	–.013
Small × Shreff	–.133*	–.222*	.194*	–.003
Medium × Shreff	–.287*	–.260*	–.080	.249**
Health remedies × Shreff	–.285*	–.223***	–.216**	.033
Cleaners × Shreff	.117	–.063	.011	–.196
Personal care × Shreff	–.612*	–.283	–.279	–.192
Paper × Shreff	.072	.066	–.115	–.138
Number of contacts × Shreff	2.152*	1.258*	–.246	.272
Concentration × Shreff	–.853	–.157	–.924**	.273

[a] Magnitude change in competitor's marketing-mix variable from 1990 to current year.
*$p < .05$.
**$p < .10$.
***$p < .15$.

TABLE 9
The Net Impact on P&G's Market Share

		PEN		USE		SOR		Share	
Variable	**Change Ratio (1996/1990)**	**Elasticity**	**Impact**	**Elasticity**	**Impact**	**Elasticity**	**Impact**	**Elasticity**	**Impact**
P&G price	1.204	–.129	.976	–.124	.977	–.295	.947	–.548	.903
P&G advertising	1.207	.026	1.005	–.001	1.000	–.020	.996	.005	1.001
P&G deals	.843	.178	.970	–.021	1.004	.012	.998	.169	.972
P&G coupons	.457	.161	.882	.008	.994	.008	.994	.177	.871
Competitor price	1.100	–.161	.985	.026	1.003	.439	1.043	.304	1.029
Competitor advertising	1.063	–.011	.999	–.012	.999	–.038	.998	–.061	.996
Competitor deals	1.131	–.145	.982	.032	1.004	–.087	.989	–.200	.976
Competitor coupons	.829	–.080	1.015	.026	.995	–.101	1.019	–.155	1.030
Intercept (e^{α})	—	1.015	1.015	1.022	1.022	1.030	1.030	1.068	1.068
Predicted Change Ratio		.835		.997		1.010		.841	

- The increase in deals by competitors exacerbated P&G's loss in penetration and had a negative impact on SOR. This negative impact of competitor deal increases is just as strong as the negative impact of P&G's own deal cuts.
- The competition's cuts in couponing and increases in net price helped P&G's SOR and offset the decrements in SOR resulting from P&G's increase in net price. But the competition's coupon cuts did not help enough, and P&G still lost penetration.
- Neither P&G's own advertising spending increases nor the competition's smaller increases had much effect, because both self- and cross-advertising elasticities are quite weak.

Profit Implications

We use our findings, along with some assumptions, to examine the potential profit impact of value pricing. Our goal is not to evaluate P&G's strategy but to explore consequences other than market share that follow from a prolonged increase in advertising and decrease in promotion. We use a simple margin calculation as in Hoch, Drèze, and Purk's (1994) study:

$$\text{(7)}\quad \text{Profit} = \text{Total Revenue} - \text{Total Variable Costs} - \text{Fixed Costs}$$
$$= [(\text{Manufacturer Price})(\text{Unit Sales})]$$
$$- [(\text{Variable Cost Per Unit})(\text{Unit Sales})]$$
$$- [\text{Fixed Costs}].$$

First, the percent changes in price and market share in Tables 1 and 9 show that total revenue should remain almost unchanged:[20]

$$\text{(8)}\quad \text{Total Revenue}_{96} = [(.818)(\text{Sales}_{90})]\,[(1.204)(\text{Price}_{90})]$$
$$= (.9849)(\text{Total Revenue}_{90}).$$

Second, under the conservative scenario that variable costs per unit do not change, the 18.2% reduction in total units sold leads to a corresponding reduction in total variable costs:[21]

$$\text{(9)}\quad \text{Total Variable Costs}_{96} = (.818)(\text{Variable Cost per Unit})(\text{Sales}_{90}).$$

Thus, the gross margins in 1990 and 1996, respectively, would be

$$\text{(10)}\quad \text{Gross Margin}_{90} = (\text{Sales}_{90})(\text{Price}_{90})$$
$$- (\text{Variable Cost per Unit})(\text{Sales}_{90})$$

and

$$\text{(11)}\quad \text{Gross Margin}_{96} = (.9849)(\text{Sales}_{90})(\text{Price}_{90})$$
$$- (.818)(\text{Variable Cost per Unit})(\text{Sales}_{90}).$$

Equation 11 shows that gross margin in 1996 would be higher than in 1990, especially if variable costs are large.

One question is whether this increase in gross margin would be enough to cover the increased fixed costs of advertising. We obtained information about P&G's financials from COMPUSTAT's annual data file. In 1990, P&G's worldwide sales and advertising were about $24 billion and $2 billion, respectively, and the United States accounted for 62% of sales, that is, $15 billion. Furthermore, P&G's cost of goods sold as a percentage of revenue was approximately 57% in 1990. Thus, we can estimate variable cost per unit as .57 times the 1990 price, and gross margins in 1990 and 1996 can be written as

$$\text{(12)}\quad \text{Gross Margin}_{90} = (\text{Sales}_{90})(\text{Price}_{90})$$
$$- (.57)(\text{Sales}_{90})(\text{Price}_{90}) = (.43)(\text{Sales}_{90})(\text{Price}_{90})$$

and

$$\text{(13)}\quad \text{Gross Margin}_{96} = (.9849)(\text{Sales}_{90})(\text{Price}_{90})$$
$$- (.818)(.57)(\text{Sales}_{90})(\text{Price}_{90})$$
$$= (.519)(\text{Sales}_{90})(\text{Price}_{90})$$
$$= (1.21)(\text{Gross Margin}_{90}).$$

Thus, P&G's U.S. gross margin can be expected to have increased by about $1.35 billion as a result of value pricing (.21 × .43 × $15 billion). Assuming that the ratio of U.S. to worldwide advertising is the same as the ratio of sales, U.S. advertising in 1990 would be approximately $1.24 billion (.62 × $2 billion), and the increase in fixed costs due to a 21% increase in advertising would be $.26 billion (.21 × $1.24 billion). Thus, the increase in gross margin would be more than enough to cover the increase in fixed advertising costs. According to our calculations, net profit would increase by $1.09 billion ($1.35 billion – $.26 billion).[22] In short, it is plausible that P&G gave up share points in return for profits.

Conclusion

We have used P&G's value pricing strategy to study the impact of a major and sustained change in advertising and promotion policy. We focus on the role of advertising and promotion in attracting and retaining customers, the factors that influence competitive response, and the way these effects combine to determine overall market share impact. On the basis of previous theory and empirical work, we develop a framework for assessing this impact that integrates both consumer and competitive response. We test this framework using data on 118 brands in 24 categories in which P&G competed over a seven-year period.

Summary of Findings

Our first research question relates to how advertising and promotion work in attracting and retaining customers. We find the following:

- Promotion increases penetration and has little impact on customer retention as measured by SOR and USE.
- Advertising appears to work primarily by increasing penetration, but the effect is weaker than that of promotion. We find little evidence that advertising increases SOR or USE among the average brand's existing users.
- Promotion has a stronger direct impact on share than advertising for the average packaged goods brand. This is a common finding in both micro and macro short-term studies (e.g., Boulding, Lee, and Staelin 1994; Tellis 1988) that has not been demonstrated previously in the case of a major and sustained policy change.

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[20] This assumes that total category sales in the market do not change (a reasonable assumption for mature categories) and the percentage change in retail selling price is equal to the percentage change in P&G's manufacturer selling price.

[21] It is likely that variable costs per unit decreased because of operating efficiencies.

[22] We do not compare these figures with P&G's reported earnings, because our data cover only U.S. grocery channel sales for these 24 categories and because we do not have information on cost cutting and other activities that P&G undertook during this period.

Our second research question pertains to the relative roles of market share response, structural factors, and firm-specific effects in determining competitor response. We find that

- Competitors' reactions to a sustained change in advertising and promotion policy by a market leader vary with the degree to which their market share is affected. Reactions also vary by structural factors, such as the market share position of the competitor and the number of markets in which it competes with the initiator of the policy change.
- Even after accounting for market share response elasticities and structural factors, there are still firm-specific effects in competitor reactions.
- Competitors do not react the same way on all marketing instruments. In this case, competitors tended to decrease advertising and coupons but used deals to gain market share even when they were benefiting from P&G's policy change.

Our third question is how consumer and competitor response combine to determine overall market share impact. We find that the net impact is a decrease in market share for the initiating company, though it is plausible that its profits increased. The loss in penetration resulting from promotion cuts is not offset by increases in SOR or by competitive reactions. The effect of promotion on share is greater than that of advertising for established brands, though the reverse is true for small brands. The implication is that cuts in promotion, even if coupled with increases in advertising, will not grow market share for the average established brand in mature consumer goods categories.

Limitations and Further Research

Although these findings are both important and stimulating, our study has some limitations. First, we focus on a policy change that involves significant changes in advertising and promotion. We do not have data on any changes P&G may have made in variables such as product assortment or new product development, so we cannot speak to their impact. Similarly, data limitations preclude the use of moderators such as sales force, distribution, and advertising copy in our consumer response model (see Gatignon 1993). Although our purpose is not to study these moderators per se, including them might have generated additional insights. Nor do we have measures of firm-specific factors such as culture and management skill, though the statistical significance of the dummy variable surrogates we use for these factors should encourage further research in this area.

Second, we cannot make conclusive statements about the impact of the strategy change on profitability in the absence of data on P&G's manufacturer price and cost data. This would be an important area for further research if relevant data become available. Still, sales are a key objective for most companies, including P&G (see Brooker 1999; Fairclough 1999; Kristofferson and Lal 1996a, b), so we believe that our analysis of market share is important.

Third, as noted previously, our analysis pertains to sales made through the U.S. grocery channel, and alternative channels such as mass and discount merchandisers have become more important in recent years. We note, however, that the shift to alternative channels is occurring for other large competitors as well.

Fourth, we assume that P&G's adoption and consistent application of value pricing is exogenous; that is, P&G did not react to competition. With only seven time series data points, we cannot investigate this issue. Trends in P&G's marketing mix over the seven-year period, however, do not reveal any major pattern shifts or reversals. If a reversal in strategy occurs in the future, it would provide another valuable opportunity to examine market response.

Finally, our analysis is based on aggregate data. There is a trade-off between the micro approach to examining individual brands, categories, or markets and the broad-based, strategic view provided by our analysis and others like it. We believe that both approaches contribute to understanding market response and should be viewed as complementing each other. More important, many of our results are consistent with micro studies, and the product categories in which we are able to replicate our analysis with disaggregate quarterly data also corroborate our findings. Still, it would be valuable to examine differences between our conclusions and those based on more disaggregate data, should those data be available. Such data would also enable researchers to study brand and category differences in market response in more detail and to study interactions between marketing-mix variables—for example, the effect of a brand's advertising and promotion on its price elasticity (e.g., Gatignon 1993; Jedidi, Mela, and Gupta 1999).

Implications for Researchers and Managers

While acknowledging these limitations, we believe that our results are provocative and raise several important questions and implications for researchers and managers:

What is the correspondence between SOR and brand loyalty? A sustained decrease in promotion and increase in advertising should have enhanced P&G's SOR through increased brand loyalty. However, advertising did not improve SOR. Furthermore, the net impact of cutting deals and coupons and of the increase in net price paid was to decrease SOR. We believe this is due to the retention role of price promotions: In a competitive environment, an existing user is more likely to repurchase the brand when it is on promotion than when it is not. But, even if promotions do not hurt SOR, underlying attitudinal loyalty could be diminishing. It is important for researchers to investigate this further (e.g., Kopalle, Mela, and Marsh 1999), because SOR is a commonly used indicator of brand loyalty (e.g., Bhattacharya 1997; Bhattacharya et al. 1996).

What does advertising do? We find that the direct effect of advertising on the components of market share is weak for all but small brands. This lack of effectiveness could be attributable to execution (e.g., Lodish et al. 1995a) or to the way advertising works for established brands in mature markets. It is important to have a base level of advertising, but even substantial increases over that base level may not generate dramatic gains in market share for established brands. Our results are consistent with those of Tellis (1988), Deighton, Henderson, and Neslin (1994), and Batra and colleagues (1995), even though we were working with a substantial increase in advertising. In any event, more research is needed on how and in what circumstances advertising works.

Market share elasticities and structural and firm-specific factors play a role in competitor response. Managers who try to anticipate competitor response must not only know how their policy change will affect competitors' market share but also consider structural issues such as the market share position of their competitors and in how many markets they compete. Furthermore, competitor-specific resources, capabilities, and culture also determine the response. Our findings strongly suggest the need for theory that can predict not only the factors that determine competitive response but also the direction of their influence.

Competitors' response to policy changes is not uniform across marketing instruments. The reasons for this need to be sorted out. An obvious potential explanation would be differences in profitability across marketing instruments, but there may also be some organizational factors at work. For example, it may be easier for managers to reallocate their total marketing budgets than to change them drastically.

Researchers should make use of major policy changes. Dekimpe and Hanssens (1995) note that most markets are stationary, which precludes the finding of persistent effects of marketing-mix variables. The substantial changes in marketing-mix variables as well as market share that accompany a major policy change provide a valuable opportunity to test for persistence. Jedidi, Mela, and Gupta (1999) do not find significant long-term effects of advertising on price or promotion sensitivity. Perhaps such effects can be detected with more substantial variation in advertising. The P&G value pricing policy is one example of a policy change, as are the Post cereal price rollback of 1998 and Marlboro's earlier price cutback. We conclude with a call for making use of these strategic policy changes to better understand the impact of marketing strategy.

Appendix A
Variables and Their Definitions

I. Variables obtained directly from IRI's *Marketing Fact Book*:
  A. Market share: percentage share of category volume.
  B. Household penetration: percentage of all households that made at least one purchase of the brand.
  C. SOR: among households that bought the brand, the percentage of their total category purchases represented by the brand.
  D. Net price per unit volume: the average price paid per unit volume, reflecting all promotional activity.
  E. Percent volume on deal: percentage of brand sales that were accompanied by some kind of deal, for example, display, feature, temporary price reduction (TPR).
  F. Percent volume with manufacturer coupon: percentage of brand sales that were made with a manufacturer coupon.
  G. Average percent price cut: the average percent savings due to TPR or coupon redemption.
II. New variables computed from IRI's *Marketing Fact Book* data:
  A. Shelf price: net price/[1 – (percent on TPR or coupon)(price cut)/10,000].
  B. PEN: brand penetration/category penetration.
  C. USE: average category purchase per brand buyer/average category purchase per category buyer.
  D. Market concentration: share of top three brands in the market.
  E. Number of market contacts: number of product categories (of 24) in which a firm competes with P&G.
III. Media advertising spending from *Leading National Advertisers*: In tens of millions of dollars. Minimum of advertising spending from remaining years used if company is not found in *Leading National Advertisers* in a given year.
IV. Category stockpilability: Factor scores for each category provided by Narasimhan, Neslin, and Sen (1996).

Appendix B
List of Product Categories

Health Remedies

1. Cold/allergy/sinus liquid
2. Cold/allergy/sinus tablets
3. Cough syrup

Cleaners

4. Dishwasher detergent
5. Dishwashing liquid
6. Dry bleach
7. Liquid laundry detergent
8. Powdered laundry detergent

Personal Care

9. Hair conditioner
10. Hair spray
11. Shampoo
12. Bar soap
13. Liquid soap
14. Mouthwash
15. Toothpaste
16. Toothbrushes

Paper

17. Paper towels
18. Diapers
19. Facial tissue
20. Toilet tissue

Food

21. Potato chips
22. Frosting
23. Brownie mix
24. Shortening

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Kissan Joseph

On the Optimality of Delegating Pricing Authority to the Sales Force

An important decision facing sales managers today is precisely how much pricing authority should be delegated to the sales force. Received theory suggests that the salesperson's superior information about customers' valuations will invariably make price delegation profitable for the firm. The empirical evidence, however, reveals that firms that grant full pricing authority generate lower profits than firms that limit pricing authority. Given this state of affairs, the author develops and analyzes a formal model that examines the optimality of delegating pricing authority to the sales force. The model preserves the notion of superior information assumed in the literature but considers as well a negative feature of much concern to practitioners, namely, the suboptimal substitution of selling effort by price discounting. The model reveals that providing the salesperson with full pricing authority is not always optimal. Specifically, in some environments, it is appropriate to limit pricing authority because this decision forces the salesperson to target high-valuation customers. In addition, the model predicts that the commission rate offered to the salesperson should be higher when pricing authority is limited. The author concludes by summarizing the context, calculus, and implications of the model with a view to assisting managers charged with the price-delegation decision.

An important decision facing sales managers today is precisely how much pricing authority should be delegated to the sales force. Dolan and Simon (1996) report that firms vary widely in this regard. Some give full pricing authority to their salespeople, whereas others grant only limited authority. Not surprisingly, the question of delegating pricing authority to the sales force has been examined in the marketing literature before (Lal 1986; Weinberg 1975). The main conclusion emerging from these studies is that as long as the incentives are properly aligned (i.e., based on gross margins and not on sales), the salesperson's superior knowledge about customers' valuations of the firm's offering will invariably make price delegation profitable for the firm.

Given these theoretical arguments in favor of delegating pricing authority to the sales force, Stephenson, Cron, and Frazier (1979) set out to investigate empirically the profit implications of price delegation. Consistent with theory, they focus their research efforts on an industry in which commissions are based on gross margins. In their analysis, responding firms are categorized into three groups: those providing their salespeople with no authority to deviate from list price, those allowing a specific percentage deviation from list price, and those granting full discretion with respect to pricing. Surprisingly, they find that firms that give salespeople the least pricing authority generate the highest levels of gross margin. A similar pattern of findings holds for the level of net profit (gross margin less salesperson compensation) enjoyed by the firm. Thus, Stephenson, Cron, and Frazier's empirical findings do not support the theoretical prescription that favors a high degree of price delegation.

Stephenson, Cron, and Frazier (1979) conclude by emphasizing the need for additional research that examines the optimality of delegating pricing authority to the sales force. They identify five factors that can mitigate, or even reverse, the optimality of delegating pricing authority to the sales force. These factors, listed in order, are (1) the kind of sales behaviors that evolve when sales personnel are given pricing latitude, (2) the amount of superior information salespeople have about customer willingness to pay, (3) the nature of competitive behavior occurring under price delegation, (4) buyers' bargaining ability and behavior under price delegation (i.e., negotiation issues), and (5) control value of gross-margin commission systems.

In this article, I develop and analyze a theoretical model that explicitly incorporates two of the five factors highlighted by Stephenson, Cron, and Frazier. On the one hand, providing pricing authority to individual salespeople enables them to use their superior information about customer willingness to pay and thereby conclude a greater number of transactions. On the other hand, providing salespeople with pricing authority leads to the possibility of suboptimal tradeoffs between price and effort. In this connection, it is interesting to note that sales managers often complain that price latitude causes sales personnel to take the path of least resistance, that is, use discounting rather than expend effort on selling (Stephenson, Cron, and Frazier 1979, p. 26). Given these opposing considerations, my primary objective in this research is to examine the net effect of these two forces in influencing the price-delegation decision.

The limited focus of the present research does not imply that the other factors identified by Stephenson, Cron, and Frazier are unimportant. Rather, this narrow focus is designed to offer a sharp understanding of how two opposing considerations influence the optimality of the price-

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delegation decision. Indeed, such an approach is consistent with what Moorthy (1993) observes about the nature and role of theoretical modeling. While commenting that theoretical modeling has rapidly become an important style of research in marketing, he writes that real-world situations are incredibly complex. Many forces come into play, and what we observe as managerial actions are the results of all these forces. As such, inferring cause and effect from observed actions can be a daunting task. Consequently, by analyzing a limited aspect of reality, theoretical modeling enables an understanding of the specific effect of a force or a subset of forces.

In addition to analyzing the impact of two key forces, the model also helps shed light on a managerially relevant question: Does the extent of pricing authority affect the level of incentives offered to the salesperson? Specifically, should a firm contemplating a reduction in pricing authority increase, decrease, or leave unchanged the commission rate offered to the salesperson?

The main analytical findings are as follows: There are regions in the parameter space in which full price delegation is the most favorable course of action and others in which limiting pricing authority is the best strategy. This is an important conclusion because it provides a basis for reconciling the conflicting empirical evidence presented in the literature. In addition, the commission rate should be higher at firms that limit pricing authority. This finding suggests that firms making the transition from full pricing to limited pricing authority also need to increase the emphasis placed on incentive pay. This finding is noteworthy because intuition would suggest that placing greater limits on pricing might be accompanied by relaxing the emphasis placed on another control element, namely, the commission rate.

The rest of the article is organized as follows: I first review the relevant literature. This overview is followed by a description of the essential features of my research setting. Next, I present the impact and resolution of the two opposing forces within the model. Finally, I present the main results in the form of two propositions and conclude by outlining how the model may be used to assist managers charged with the price-delegation decision.

Literature Review

Dolan and Simon (1996) succinctly delineate the arguments for and against delegating pricing authority to the sales force. An argument for price delegation is that, in general, the salesperson is in the best position to assess customer willingness to pay. Consequently, delegating pricing authority to the salesperson achieves optimal customization of prices. Moreover, if the salesperson's compensation is based on gross margins rather than sales revenue, the objectives of the firm and the salesperson are identical; therefore, given the better knowledge of the customer, the salesperson should be given a good measure of pricing authority.

This line of reasoning has been formally developed by Weinberg (1975) and, more recently, Lal (1986). Specifically, Lal demonstrates that price delegation will be more profitable than centralization under conditions of asymmetric demand information. However, in his model, price delegation comes at a cost, in that the firm must pay salespeople a compensation premium (information rent) to motivate them to vary prices appropriately for different customers. Thus, the profitability of price delegation depends on whether the gains from price customization exceed the informational rents that need to be paid to the salespeople.

Dolan and Simon (1996) also present arguments against price delegation. They suggest that providing pricing authority to salespeople may make them too compliant in the negotiating situation. In other words, "there is the temptation to always play it safe to get the order" (Dolan and Simon 1996, p. 313). This line of reasoning has been formally examined by Berger (1972) and Weinberg (1975). Their research suggests that price delegation will be less profitable if the salesperson is risk averse. Another argument against price delegation is that it enables buyers to negotiate better prices. As an old purchasing axiom states, "Find out if the salesperson can reduce the price. If he can, insist that he do so" (Stephenson, Cron, and Frazier 1979, p. 27).

These explanations certainly enhance the understanding of the optimality of the price-delegation decision. Many of the practitioner comments can be evaluated in the context of formal models. For example, salespeople's ability to use their superior information is captured in Lal's (1986) model. Similarly, the observation that risk aversion may cause salespeople to discount suboptimally is suggested by Berger (1972) and Weinberg (1975). However, the issue of a suboptimal trade-off between effort and price has not been explicitly examined in the literature before. Therefore, I next develop a formal model that explicitly incorporates this trade-off.

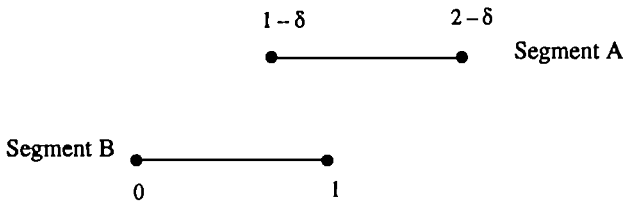
Research Setting

The basic framework used in this study is in the tradition of decision-theoretic research on sales force compensation (Srinivasan 1981). In developing the features of my research setting, I am guided by two considerations. First, I rely on the simplest model that enables me to study the impact of the two forces I consider. Second, I use control mechanisms commonly employed in the practice of sales force management.

Nature of Price Delegation

As is revealed in previous research, price delegation is not a binary decision variable; firms typically offer varying levels of price latitude. These levels include no pricing authority, limited pricing authority, and full pricing authority. Because no pricing authority is a rigid condition, it is unlikely to be the optimal strategy in any market with a reasonable amount of diversity in customer willingness to pay. Therefore, in my research, I exclude this strategy and focus on the other two cases. Under limited pricing authority, price latitude is confined to a prespecified percentage of the list price or bounded by a price floor. In this scenario, both the price floor and the commission rate influence the salesperson's actions. Under full pricing authority, the salesperson has complete freedom to set any price above cost (assumed, without loss of generality, to be zero in the ensuing analysis), the only control being the commission rate. These two pricing policies are likely to encapsulate the practice of most firms in any given industry. In Stephenson, Cron, and Fra-

FIGURE 1
Distribution of Reservation Values in the Market



zier's (1979) sample, for example, these two policies describe the practices of 72% of the firms in the hospital supplies industry.

Structure of the Market

The market consists of two segments, A and B (see Figure 1). Customers in these segments buy either one unit of the firm's offering or nothing. Furthermore, customers in Segment A have reservation values for the product that are independently distributed and come from the uniform distribution $[1 - \delta, 2 - \delta]$, $\delta > 0$. (I discuss the significance of the parameter, δ, subsequently.) Although these customers have positive economic value for the product, they have no previous awareness of its existence. Thus, they will purchase the firm's offering only if a salesperson contacts them and familiarizes them with the features of the product.

Segment B consists of customers who value the product to a lesser extent. Customers in this segment have reservation values that are independently distributed and come from the uniform distribution $[0, 1]$. Again, although these people have positive economic value for the firm's offering, they will make a purchase only if a salesperson contacts them and familiarizes them with the features of the product.

Finally, I assume that the firm views Segment A as its target segment. In essence, the role of the salesperson is to identify customers who value the product highly and promote it to them.[1] However, as can be expected, there is some overlap between the two segments. In particular, there are some customers in both segments whose valuations lie in the interval $[1 - \delta, 1]$. The parameter δ is thus a measure of overlap between the two segments. It is reasonable to expect that its value will be greater than 0 but significantly less than 1. Of course, the firm is concerned primarily about the price obtained for the product; it is less concerned whether a particular customer belongs to Segment A or B. Nevertheless, given that customers in Segment A tend to have higher reservation values, the firm necessarily will encourage the salesperson to identify and pursue customers belonging to Segment A.

Conceptualization of the Selling Function

I conceptualize the selling function as consisting of two tasks, namely, prospecting and face-to-face communication. *Prospecting* consists of identifying customers who belong to the firm's target segment. *Face-to-face communication* consists of familiarizing the customer with product features. Although both activities are necessary components of the sales process, I view prospecting as the central task. Face-to-face communication, though important, simply follows as a matter of course after the potential customer has been identified. Such an abstraction of the selling process is consistent with the views expressed in textbooks on professional selling. Weitz, Castlebury, and Tanner (1998, p. 186), for example, write, "Many experts note that prospecting is the *most* important activity that a salesperson does." Furthermore, other aspects of the sales process, such as handling price objections, may never arise if the right customer is contacted.

Accordingly, although the selling function is characterized by two tasks, only the effort associated with prospecting plays an active role. The effort associated with face-to-face communication is included only for logical completeness. A little thought will show that this is not too stringent an assumption. After effort has been expended in gaining an audience with the prospect, it is in the salesperson's best interest to do the best job of face-to-face communication.

Next, I specify that the effort expended by the salesperson on prospecting is unobservable to the firm (or to the sales manager acting on behalf of the firm). However, through a quick perusal of the salesperson's call report, the firm can monitor the number of prospects contacted. Accordingly, the firm sets a target that the salesperson will call on N prospects during a given period.[2] As mentioned previously, after the salesperson has called on a prospect, he or she simply familiarizes the customer with the features of the product in face-to-face communication. Clearly, in many real-world situations, face-to-face communication may also involve negotiating and boosting willingness to pay. These dynamics, though important, are outside the scope of the model.

Prospecting Technology

Given the aforementioned conceptualization of the selling function, the primary role of the salesperson is to identify target customers. The prospecting technology employed by the salesperson has the following features. Specifically, I assume that there is a large vector of variables, Z, that can help the salesperson identify customers who belong to Segment A. As outlined by Shapiro and Bonoma (1984), these variables may include demographic as well as situational factors. Moreover, as in discriminant analysis, the ability of these variables to correctly identify Segment A customers occurs with some error. However, the more variables, z, in Z that are used to screen a customer, the greater is the probability, ϕ, that the customer belongs to Segment A. The parameter ϕ therefore may be interpreted as a measure of the quality of the prospecting strategy.

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[1] Indeed, sales organizations today are becoming increasingly concerned about targeting profitable customers. Specifically, in many industries, sales managers are encouraging salespeople to profile and target high-margin customers (Rasmusson 1999).

[2] This is a fairly typical way to monitor salesperson effort. Churchill, Ford, and Walker (1997, pp. 224–25), for example, document that sales organizations frequently use activity quotas that specify the number of calls that the salesperson should make on new accounts.

I now posit a simple linear relationship between the number of screening variables used, z, and the quality of the prospecting strategy, ϕ. In other words, the parameters z and ϕ are interchangeable, except for a scaling parameter. The important notion of diminishing returns is introduced on the costs side, as described subsequently. This type of modeling has precedent in the sales force compensation literature, in which the notion of diminishing returns is captured by a linear response function and a quadratic cost function (see, e.g., the model formulations in Lal and Srinivasan [1993] and Joseph and Thevaranjan [1998]).

Cost of Prospecting

I next specify that the salesperson incurs a fixed cost, τ, in interacting with a potential prospect. This cost may be thought of as the effort associated with initiating a precall interaction (letter, telephone call, and the like). Upon completing this interaction, the salesperson receives information that enables the customer to be described fully in terms of the vector Z.

In this scenario, the salesperson's decision variable is to choose the number of screening variables, z. As mentioned previously, this decision directly affects the quality of the prospecting strategy, ϕ. Moreover, the greater the number of screening variables used, the larger is the number of customers the salesperson must contact and profile before finding one that is acceptable. I now specify a convex relationship between the number of customers to be contacted and the number of screening variables used. In other words, customers surviving screening become increasingly scarce as more and more screening variables are used. Mathematically, this convex relationship may be expressed by the quadratic expression γz^2, or equivalently, $\gamma \phi^2$. The parameter γ represents a scaling parameter and is likely to be inversely related to the proportion of Segment A customers in the market. The cost of identifying a single prospect, C(1), using a prospecting strategy with quality ϕ may now be written as

$$C(1) = \tau \gamma \phi^2. \tag{1a}$$

Next, making the reasonable assumption that the size of the market is large relative to N, the same cost structure holds for identifying each additional customer. Thus, the cost of identifying N prospects using a prospecting strategy of quality ϕ is given as

$$C(N) = N \tau \gamma \phi^2. \tag{1b}$$

Replacing $\gamma \tau$ by a new parameter, $\lambda/2$, Equation 1b can be rewritten as

$$C(N) = N \frac{\lambda}{2} \phi^2. \tag{1c}$$

The 1/2 is introduced simply to reduce clutter in future equations. Accordingly, $\lambda/2$ may be interpreted straightforwardly as the cost of effort associated with identifying a single prospect using a high-quality prospecting strategy ($\phi = 1$). It is convenient to call λ the effort cost of following a high-quality prospecting strategy. It has the intuitively appealing property of being influenced by both market conditions (note that the fraction of customers who belong to Segment A affects γ) and a sales process variable (cost of precall interaction, τ).

Given this prospecting technology, the quality of the prospecting strategy chosen by the salesperson directly affects the fraction of customers who belong to Segment A. Specifically, a given level of prospecting quality, ϕ, gives rise to a situation in which N ϕ of the N customers called on belong to Segment A. The remaining $N(1 - \phi)$ customers belong to Segment B.

Information Structure

In my research, I preserve the key notion that the salesperson possesses superior information about customers' willingness to pay. I further assume that upon visiting the prospect, the salesperson is able to identify precisely the reservation value of the customer and thus sets price equal to that reservation value.[3] If the firm has a policy whereby the price must be above a certain floor (limited pricing authority case) and this floor exceeds the reservation value of the customer, the sale is not closed.

It is important to recognize that even though the firm is able to observe the price paid by each customer, it cannot infer the quality of the prospecting strategy and therefore the amount of effort devoted to prospecting. This is because the overlap in reservation prices between the two segments does not allow inferences to be made about the effort invested in prospecting. For example, if the salesperson obtains a price in the interval $[1 - \delta, \delta]$, the firm cannot tell whether the salesperson worked hard to identify a Segment A customer or was simply lucky in obtaining a Segment B customer with a relatively high reservation value. In general, a given mix of N customers with realized prices coming from the three intervals—$[0, 1 - \delta]$, $[1 - \delta, 1]$, and $[1, 2 - \delta]$—can be generated by several values of ϕ. Because of this, observed prices are at best an imperfect signal for the level of effort devoted to prospecting.[4]

Compensation Plan

Consistent with the research context, it is assumed that the salesperson is compensated on a linear commission rate, B, based on realized gross margins, x. Compensation, S, is thus written as

$$S = B x. \tag{2}$$

Salesperson's Utility Function

As specified by Srinivasan (1981) and Basu and colleagues (1985), it is assumed that the salesperson is a utility-maximizer. The overall level of utility enjoyed by the salesperson consists of compensation less the cost of effort, which may now be written as

$$U = S - N\frac{\lambda}{2}\phi^2 = Bx - N\frac{\lambda}{2}\phi^2. \tag{3}$$

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[3] Again, considerations of negotiation, bargaining, and so forth are excluded because these forces are outside the scope of the model.

[4] In theory, it is possible to contract on the distribution of realized prices and improve contracting efficiency. However, I do not consider such schemes because they are never observed in practice. In the industry analyzed by Stephenson, Cron, and Frazier (1979), for example, commissions are based simply on gross margins.

The utility function described in Equation 3 assumes that the salesperson is risk neutral. In essence, issues of risk and risk sharing are not included in the analysis because Berger (1972) and Weinberg (1975) have already investigated the impact of salesperson risk aversion on price delegation.

Analysis

The analysis of the model is divided into three main parts. First, the profits of the firm are derived under full pricing authority. Second, the profits of the firm are derived under limited pricing authority. Third, firm profits under the two cases are compared and conditions are described in which each pricing strategy is optimal.

Profits Under Full Pricing Authority

In this scenario, the firm gives the salesperson full pricing authority, and control is effected solely through the compensation plan. The timing of efforts is sequential and is described as follows: The salesperson first prospects for customers with a quality level ϕ. This yields N ϕ customers who belong to Segment A and N(1 − ϕ) customers who belong to Segment B. These N customers are then contacted and engaged in face-to-face communication.

Given a commission rate, B, the salesperson maximizes the following utility function:

$$(4)\qquad \underset{\phi}{\text{Max}}\; BN\phi\,\frac{3-2\delta}{2} + BN(1-\phi)\frac{1}{2} - N\frac{\lambda}{2}\phi^2.$$

In Equation 4, the first term represents commission income obtained from sales to the Nϕ customers in Segment A. Because the salesperson has full pricing authority, each of these transactions can be closed successfully. Moreover, the expected price obtained from these customers is simply the mean of the distribution of their reservation values, namely, (3 − 2δ)/2. The second term represents commission income from the N(1 − ϕ) customers in Segment B. As discussed previously, the salesperson can consummate the sale with each of these customers. Here, the expected price obtained is 1/2. Finally, the last term represents the disutility for effort. First-order conditions yield

$$(5)\qquad \phi = \frac{B(1-\delta)}{\lambda}.$$

Next, knowing the salesperson's response to a given commission rate, B, the firm chooses a commission rate that maximizes its profits. The firm's profit is the level of gross margins generated by the salesperson less commisions. Using Equation 5 and assuming zero marginal costs, the firm's problem may be formally written as

$$(6)\qquad \underset{B}{\text{Max}}\,(1-B)N\frac{B(1-\delta)}{\lambda}\frac{3-2\delta}{2} + (1-B)N\left[1-\frac{B(1-\delta)}{\lambda}\right]\frac{1}{2}.$$

Equation 6 can be simplified to

$$(7)\qquad \underset{B}{\text{Max}}\,(1-B)BN\frac{(1-\delta)^2}{\lambda} + (1-B)\frac{N}{2}.$$

First-order conditions yield

$$(8)\qquad B = \frac{1}{2} - \frac{1}{4}\frac{\lambda}{(1-\delta)^2}.$$

Equation 8 reveals that the optimal commission rate decreases in the parameter that reflects the cost of effort, λ, as well as the overlap parameter, δ. As λ increases, it becomes more costly to induce effort through incentives; consequently, the firm finds it less attractive to use incentives. Similarly, as δ increases, the two segments become less distinct and prospecting becomes less valuable; consequently, the firm again relies on incentives to a lesser extent.

Finally, using Equations 7 and 8, the firm's expected profits, E[π], may now be written as

$$(9)\qquad E[\pi] = \frac{1}{4}\frac{N(1-\delta)^2}{\lambda} + \frac{N\lambda}{16(1-\delta)^2} + \frac{N}{4}.$$

Overall, the analysis here reveals that providing the salesperson with full pricing authority provides an important benefit, namely, the ability to match price to customer willingness to pay and thereby successfully complete all the N transactions.

Profits Under Limited Pricing Authority

As in the previous scenario, in which the salesperson has full pricing authority, the efforts are sequential in that prospecting is followed by face-to-face communication. In this situation, however, the firm yields only limited pricing authority in that the salesperson can discount only up to a predetermined floor. Theoretically, this floor can lie anywhere in the interval [0, 2 − δ]. However, in the Appendix, it is shown that the firm will never choose to set a floor greater than 1 − δ, the lowest reservation value possessed by a customer in Segment A. Consequently, the following equation assumes a price floor that, at most, takes the value 1 − δ. Denoting this price floor by α,[5] the salesperson maximizes the following utility function:

$$(10)\qquad \underset{\phi}{\text{Max}}\; BN\phi\,\frac{3-2\delta}{2} + BN(1-\phi)(1-\alpha)\frac{1+\alpha}{2} - N\frac{\lambda}{2}\phi^2.$$

In Equation 10, the first term represents the salesperson's commission income obtained from sales to customers in Segment A. Note that because the price floor is ≤ 1 − δ, the salesperson can conclude sales with all Nϕ customers in this segment. The second term represents commission income obtained from customers in Segment B. Here, given the price floor α, the salesperson can conclude sales with only (1 − α) fraction of these N(1 − ϕ) customers; some customers will not buy the product because it exceeds their willingness to pay. Moroever, the expected price obtained from these customers is (1 + α)/2. Finally, the third term represents the disutility for effort. First-order conditions yield

$$(11)\qquad \phi = \frac{B(1-\delta+.5\alpha^2)}{\lambda}.$$

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[5] Note that α = 0 corresponds to the full pricing authority case.

Comparing Equation 11 with Equation 5 reveals a key benefit of limiting pricing authority. Specifically, limiting pricing authority forces the salesperson to increase the quality of prospecting ($1 - \delta + .5\alpha^2 > 1 - \delta$ for all $\alpha > 0$). In effect, the lack of pricing flexibility causes the salesperson to realize that poor prospecting cannot be offset by price discounting; consequently, the salesperson expends greater effort on prospecting.

As previously, knowing the salesperson's response to a given price floor and commission rate, the firm chooses the optimal values of these variables. From Equation 11, the firm's problem may be written formally as

$$(12) \qquad \underset{\alpha, B}{\text{Max}} \, (1 - B)N \frac{B(1 - \delta + .5\alpha^2)}{\lambda} \frac{3 - 2\delta}{2} + (1 - B)N\left[1 - \frac{B(1 - \delta + .5\alpha^2)}{\lambda}\right](1 - \alpha)\frac{1 + \alpha}{2}.$$

First-order conditions yield

$$(13) \qquad B = \frac{1}{2} - \frac{\lambda(1 - \alpha^2)}{[2 - 2\delta + \alpha^2]^2}.$$

As in the case of full pricing authority, Equation 13 reveals that the optimal commission rate decreases in the parameter that reflects the cost of effort, λ, as well as the overlap parameter, δ. In addition, Equation 13 reveals that the level of incentives increases as the price floor, α, increases. In other words, at the optimum, restricting the salesperson's freedom with respect to pricing should be accompanied by an increase in the commission rate. This finding forms the basis for P_2, which is discussed in greater detail in the Findings section.

From Equations 12 and 13, the firm's expected profits may now be written as

$$(14) \qquad E[\pi] = \frac{N(2 - 2\delta + \alpha^2)^2}{16\lambda} + \frac{N\lambda(1 - \alpha^2)^2}{4(2 - 2\delta + \alpha^2)^2} + \frac{N(1 - \alpha^2)}{4}.$$

Overall, the analysis here reveals that the benefit of limiting pricing authority is that it forces the salesperson to exert greater effort on prospecting. However, a limitation of this strategy is that some sales transactions are not completed because price exceeds the customer's reservation value. Thus, it is not obvious how limited pricing authority will compare with full pricing authority. Therefore, the profits across the two scenarios will be analyzed next for the sake of comparison.

Optimality of Price Delegation

As suggested in the previous subsection, I compare Equations 9 and 14 to describe the optimal level of price delegation.[6] Because the analytical expressions in these equations are not very tractable, I use numerical techniques. Moreover, because both profit functions include the term N, it is appropriate to restrict the evaluation of firm profits to the $\lambda - \delta$ parameter space. The parameter λ has no natural limits; nevertheless, the interval [0, 1] is found to be sufficient to present findings of interest. The parameter δ, in contrast, represents the overlap in the segmentation scheme. As such, it will be some positive number significantly less than 1. For the purposes of this research, the interval [0, .10] is found to be sufficient to present findings of interest. The key results are displayed in Figure 2 and discussed in the next section.

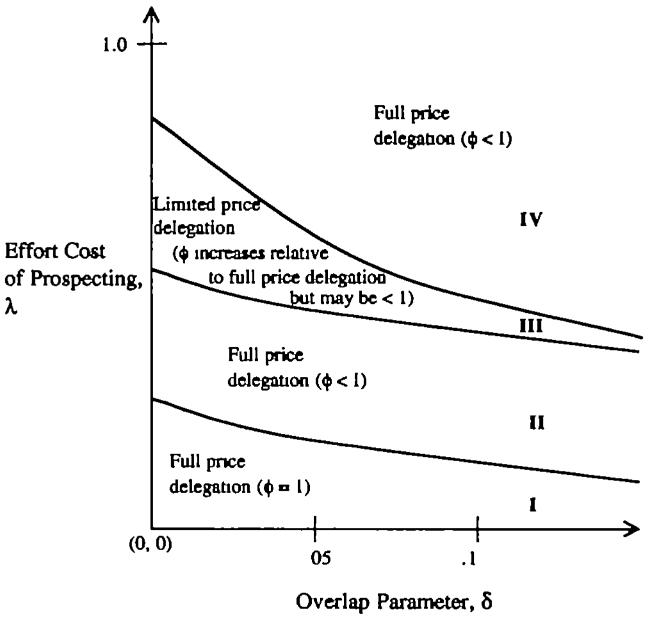
Findings

I summarize the main findings in terms of two key propositions. P_1 demonstrates that the optimality of delegating pricing authority varies across the parameter space. P_2 demonstrates how the commission rate varies with the price delegation decision.

> P_1: Full price delegation is not optimal in all parts of the parameter space. Specifically, for a given value of the overlap parameter, δ, the optimality of full price delegation varies nonmonotonically with the effort cost of following a high-quality prospecting strategy, λ. In particular, when λ is relatively low or relatively high, full price delegation is the optimal strategy. However, when λ takes on intermediate values, limited price delegation is the optimal strategy.

Figure 2 reveals that the parameter space splits into four distinct regions. In Region I, the cost of following a high-quality prospecting strategy is relatively low. Consequently, the optimal commission rate under full pricing authority is such that it induces the salesperson to follow a high-quality prospecting strategy (i.e., induces $\phi = 1$). As such, there is no cost to granting full pricing authority to the salesperson

FIGURE 2
Optimality of Price Delegation



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[6] In comparing Equations 9 and 14, the parameters are varied in the following fashion: λ in steps of .1, δ in steps of .025, and α in steps of .01. At each $\lambda - \delta$ point, the profit in Equation 9 is compared with the profit in Equation 14 using a value of $\alpha \in [0, 1 - \delta]$ that maximizes Equation 14. If Equation 9 has a larger value than Equation 14, then full pricing authority is the optimal strategy; otherwise, limited pricing authority is the optimal strategy.

because the opportunity to make suboptimal trade-offs between effort and price does not arise in the first place.

In Region II, the optimal commission rate under full pricing authority is such that it induces less-than-full attention to prospecting ($\phi < 1$). Therefore, as is concluded in the discussion following Equation 11, limiting pricing authority will increase the effort devoted to prospecting. Nevertheless, in this region, limiting pricing authority is not profitable because the level of effort induced by the commission rate under full pricing authority is close to ideal (recall that λ is still relatively low in this region). Thus, although limiting pricing authority can increase ϕ, the incremental gain is not worth the loss in sales arising from the lack of pricing flexibility.

Next, in Region III, the optimal solution is indeed to limit pricing authority. Here, λ takes on an intermediate value; consequently, the effort induced by incentives under full pricing authority is relatively low. Thus, in this region, limiting pricing authority has the potential to increase the effort devoted to prospecting substantially.[7] Unlike in Region II, this improvement in effort is accompanied by an improvement in firm profits as well. In effect, limiting pricing authority forces the salesperson to target high-valuation customers, and this benefit exceeds the loss in sales arising from the lack of pricing flexibility.

Finally, in Region IV, the optimal strategy is again to resort to full pricing authority. In this region, the effort cost of following a high-quality prospecting strategy is relatively high; consequently, forcing more attention on prospecting by limiting pricing authority is simply not cost effective.

> P_2: In the region where limiting pricing authority is the optimal strategy, the commission rate offered to the salesperson under limited pricing authority is higher than the corresponding commission rate offered to the salesperson under full pricing authority.

P_2 demonstrates that a firm making the transition from full pricing authority to limited pricing authority also needs to increase the commission rate offered to the salesperson. Intuitively, this is because limiting pricing authority enhances the effectiveness of commissions in inducing effort; consequently, the firm prefers to use incentives to a greater extent. P_2 is interesting because it is counterintuitive. Limiting the salesperson's freedom with respect to pricing would be expected to be accompanied by a relaxation in the emphasis placed on the other element of the control system, namely, the commission rate. In contrast, according to the model, limiting pricing authority increases the emphasis that needs to be placed on commissions.

Discussion and Managerial Implications

In this research, I develop and analyze a model that formally examines the optimality of delegating pricing authority to the sales force. I find that there are environments in which full price delegation is the optimal course of action and others in which limited price delegation is the best strategy. As mentioned previously, this is an important theoretical finding because it has the potential to reconcile the conflicting empirical evidence reported in the literature with respect to the decision to delegate pricing authority.

An appealing feature of my model is that it explicitly incorporates the general complaint that price delegation causes salespeople to reduce their selling efforts. Specifically, the analysis reveals that giving salespeople full pricing authority may lead to situations in which salespeople use discounts to garner sales rather than expend effort to pursue customers who value the product highly. Thus, in some situations, it makes sense for the firm to limit pricing authority even though the salesperson has superior information about customer willingness to pay. Moreover, the analysis also reveals that limiting the amount of pricing authority and increasing the commission rate combine synergistically to ensure that the salesperson indeed vigorously pursues these customers. This combination of control elements is counterintuitive. Intuition would suggest that the commission rate should be higher when the salesperson has greater latitude with respect to pricing.

I summarize the context, calculus, and main implications of the model in Table 1 with a view to assisting sales managers charged with the price-delegation decision. Hopefully, the context described by the model is not overly restrictive and many sales organizations will find the essential features relevant. However, practitioners need to be alerted that several other factors, such as those highlighted by Stephenson, Cron, and Frazier (1979), will also play a role in determining the optimality of the price-delegation decision. Nevertheless, the model succinctly describes the net impact of two forces that pertain to the price-delegation decision, namely, superior salesperson information about customer willingness to pay and suboptimal effort–price tradeoff. As such, it should prove useful to managers charged with the price-delegation decision.

In the future, it is likely that the importance of price customization will increase as sales organizations use information-age technology to reach more diverse markets. Thus, it is likely that the questions of whether pricing authority should be granted to salespeople and, if so, how much authority is granted will continue to be of interest to academicians and practitioners alike. The present study should stimulate additional research, especially on the empirical side, that will deepen the understanding of price delegation in sales organizations.

Appendix

Here, I show that the firm will never find it profitable to set a price floor above $1 - \delta$. To understand this, consider the following: Suppose the firm sets a price floor that is greater

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[7] Three points may be of interest to the technically oriented reader. First, when the overlap parameter, δ, exceeds .17, Region III vanishes altogether and full pricing authority is always the optimal solution. Intuitively, as δ increases, the two segments become less distinct and the need for prospecting decreases. This, in turn, eliminates the need for inducing greater effort through a strategy of limited pricing authority. Second, the optimal price floor (α) in most of Region III is either equal to or close to $1 - \delta$. Third, the relatively small area captured by Region III does not imply that this solution will occur infrequently in practice.

TABLE 1
Model Context, Calculus, and Implications

Model Context	Model Calculus
The model is set in selling environments in which •Customers vary widely in their valuations of the firm's offering; •Prospecting, that is, identifying customers with high valuations, is a significant component of the selling task; and •Commissions based on gross margins serve as an important control element.	Limiting pricing authority can serve as an additional control element; it provides an important benefit but comes at a cost: •Benefit: forces the salesperson to devote greater attention to prospecting because the ability to close sales by discounting has been curtailed. •Cost: prevents the salesperson from matching price to customer willingness to pay; consequently, fewer transactions are completed.

Model Implications

Effort Cost of Following a High-Quality Prospecting Strategy	Control Structure	Intuition
Relatively low	Full pricing authority	Because the effort cost of following a high-quality prospecting strategy is relatively low, commissions alone can ensure sufficient attention to prospecting. In addition, full pricing authority provides salespeople the ability to conclude a greater fraction of transactions.
Intermediate	Limited pricing authority and increased reliance on commissions	Limiting pricing authority forces greater attention to prospecting because the ability to discount price has been curtailed. In addition, increased reliance on commissions reinforces the importance of targeting high-valuation customers.
Relatively high	Full pricing authority	Because the effort cost of following a high-quality prospecting strategy is relatively high, it is not cost effective to induce more effort on prospecting by limiting pricing authority. The firm gains more by giving the salespeople pricing freedom so that they conclude a greater fraction of transactions.

than $1 - \delta$ but less than 1. Denoting this price floor by $1 - \delta + \Delta$, the salesperson's problem is given by

$$\text{(A1)} \quad \max_{\phi} \; BN\phi \frac{3 - 2\delta + \Delta}{2}(1 - \Delta) + BN(1 - \phi)\frac{2 - \delta + \Delta}{2}(\delta - \Delta) - N\frac{\lambda}{2}\phi^2.$$

In Equation A1, the first term represents sales from customers in Segment A. With a price floor of $1 - \delta + \Delta$, the expected price is $(3 - 2\delta + \Delta)/2$, and the salesperson can conclude sales with $(1 - \Delta)$ fraction of customers in Segment A. The second term represents sales from customers in Segment B. For these customers, the expected price is $(2 - \delta + \Delta)/2$, and the salesperson can conclude sales with $(\delta - \Delta)$ fraction of these customers. First-order conditions yield

$$\text{(A2)} \quad \phi = \frac{B(1.5 - 2\delta + .5\delta^2)}{\lambda}.$$

Equation A2 reveals that the level of effort induced is independent of Δ. In other words, the effort that is induced is constant for all $\alpha \in [1 - \delta, 1]$. However, setting a price floor in this interval is costly because it will exclude some customers. Thus, the firm will never find it profitable to set such a price floor.

Finally, a little thought will show that the firm will not want to set a price floor greater than 1 either. In effect, setting a floor above this level simply excludes customers that the salesperson should be calling on in the first place, namely, the firm's target segment.

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Kusum L. Ailawadi, Scott A. Neslin, & Karen Gedenk

Pursuing the Value-Conscious Consumer: Store Brands Versus National Brand Promotions

The objective of this article is to determine whether national brand promotions and store brands attract the same value-conscious consumers, which would aggravate channel conflict between manufacturers and retailers. The authors identify psychographic and demographic traits that potentially drive usage of store brands and national brand promotions. They then develop a framework and structural equation model to study the association of these traits with store brand and national brand promotion usage. The authors find that though demographics do not influence these behaviors directly, they have significant associations with psychographic characteristics and therefore are useful for market targeting. Most important, usage of store brands and usage of promotions, particularly out-of-store promotions, are associated with different psychographics. Store brand use correlates mainly with traits related to economic benefits and costs, whereas the use of out-of-store promotions is associated mainly with traits related to hedonic benefits and costs. These differences result in four well-defined and identifiable consumer segments: deal-focused consumers, store brand–focused consumers, deal and store brand users (use-all), and nonusers of both store brands and deals (use-none). Therefore, manufacturers and retailers have the opportunity to either avoid each other or compete head to head, depending on which segment they target.

Sales promotions accounted for 74% of the marketing budget of U.S. packaged goods firms in 1997 (Cox Direct 1998), up from 65% in 1984 (Donnelley Marketing Inc. 1995). During this time, the market share of store brands increased in several product categories, accounting for 20% of sales overall in 1998 (Dunne and Narasimhan 1999). Although there are many reasons that manufacturers offer promotions and retailers offer store brands, one common motivation is to provide value to the consumer. The average store brand sells for approximately 30% less than national brands, and national brand promotions typically deliver discounts of 20%–30% (Information Resources Inc. 1998; Sethuraman 1992). Given this common motivation for national brand promotions and store brands, the natural question is whether these offerings attract the same consumers. If they do, there is a tug-of-war between manufacturers and retailers for the same market segment, whereas if not, the partitioning of market segments could reduce competition between them (e.g., Moorthy 1988).

The answer to this question is not readily apparent. The common emphasis on delivering value suggests that store brands and national brand promotions attract the same consumers. Consistent with this belief, some researchers have argued that national brand promotions are an effective way to combat the growth of store brands (e.g., Lal 1990; Quelch and Harding 1996). However, national brand promotions and store brands may satisfy different consumer needs, and consumers may incur different costs in using them. For example, promotions provide not only economic but also hedonic benefits, such as exploration and self-expression (Chandon, Wansink, and Laurent 2000), whereas store brands may not provide hedonic benefits to the same extent. Similarly, making use of promotions can require consumers to plan their shopping or shop at different stores, whereas buying store brands may not entail these costs.

Another factor that makes it difficult to determine whether the same consumers use both national brand promotions and store brands is that previous research has mainly focused on one behavior or the other but rarely on both in the same study. Blattberg and Neslin (1990, Ch. 3) summarize several studies that characterize the deal-prone consumer in terms of demographics and/or psychographics. Other studies do the same for store brand–prone consumers (e.g., Baltas and Doyle 1998; Cunningham, Hardy, and Imperia 1982; Richardson, Jain, and Dick 1996). However, there is little work that studies both behaviors. Doing so would provide the common basis for comparison, in terms of both the characteristics studied and the method employed, that is necessary for making a definitive judgment on this issue.

The objective of this article is to determine whether deals and store brands attract the same consumers through a study of the demographic and psychographic factors that drive usage of these offerings. Our analysis proceeds in three stages. First, we develop a structural equation model to study the fundamental relationships of psychographics and

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demographics with deal and store brand usage.[1] Second, we perform a cluster analysis to uncover the usage segments that emerge from these relationships. Third, we develop a predictive model to classify consumers into these segments. The result is a deeper understanding of the drivers of deal and store brand usage, insight on whether deal and store brand users belong to the same market segment, and guidance for how to target the various segments.

This article is unique in three ways. First, we unify and complement previous work that has examined deal use and store brand use separately. Second, we consider two types of promotion—in-store and out-of-store. The first type includes displays, in-store specials, and so forth that are encountered in the store and used opportunistically or passively, whereas the second type includes coupons, in-store flyers, and the like, which are actively considered before the consumer goes shopping (Bucklin and Lattin 1991; Schneider and Currim 1991). Third, we examine both psychographic and demographic characteristics and investigate whether demographics work by determining deal and store brand usage directly or whether they work indirectly through their impact on psychographics (see Mittal 1994; Urbany, Dickson, and Kalapurakal 1996).

We find that national brand promotion usage and store brand usage are distinct behaviors, driven by different psychographics. Store brand users are characterized by psychographics linked largely to economic benefits and costs, whereas out-of-store promotion users are characterized by psychographics linked mainly to hedonic benefits and costs. In-store promotion users differ from out-of-store promotion users on some hedonic benefits and cost-related psychographics. However, users of these two types of promotions also have a lot in common. These findings result in a clearly defined store brand user segment, a national brand promotion segment (combining in-store and out-of-store promotions), and two other segments: one partaking in both store brands and national brand promotions and one partaking in neither. We also find that demographics influence these behaviors primarily through their effect on psychographics rather than directly.

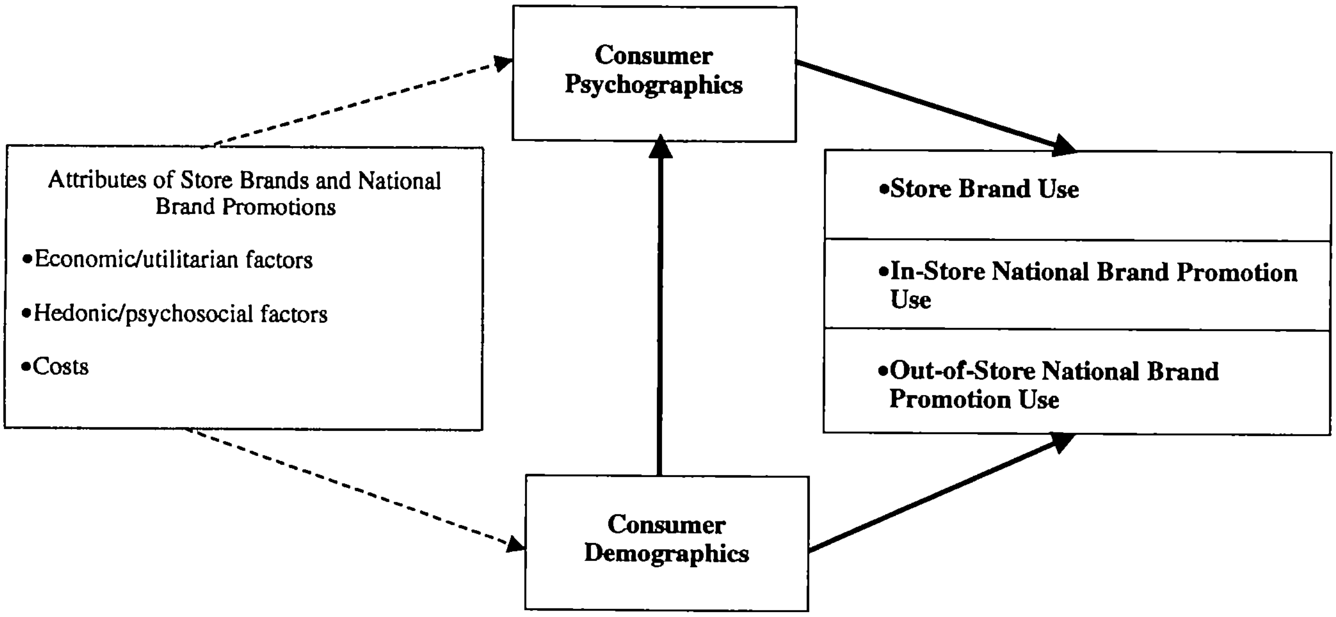
The rest of the article is organized as follows: We present our conceptual framework, structural model, and data in the following section. Next, we describe the results of the structural model and the segmentation analysis. We conclude with a summary of findings and their implications for researchers and managers.

Conceptual Framework and Model

Overview of Conceptual Framework

In Figure 1, we provide an overview of our conceptual framework. The solid lines represent the structural equation model to be estimated. Although our overall purpose is to distinguish between store brand and deal users, previous research suggests that deal usage may not be a homogeneous construct (Henderson 1984; Lichtenstein, Netemeyer, and Burton 1995). We therefore build on Schneider and Currim's (1991) distinction between active and passive promo-

FIGURE 1
Conceptual Framework


Consumer Psychographics
Attributes of Store Brands and National Brand Promotions
•Economic/utilitarian factors
•Hedonic/psychosocial factors
•Costs
•Store Brand Use
•In-Store National Brand Promotion Use
•Out-of-Store National Brand Promotion Use
Consumer Demographics

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[1] In the remainder of the article, when we refer to promotion or deal usage, we mean promotions on national brands.

tions and Bucklin and Lattin's (1991) distinction between planned and opportunistic shopping behavior and divide deal usage into in-store and out-of-store promotions. Thus, the three behaviors we wish to characterize are store brand use, in-store national brand promotion use, and out-of-store national brand promotion use.

Figure 1 proposes that these three behaviors are influenced by consumer psychographic and demographic characteristics. Demographics influence these behaviors not only directly but also indirectly through their effect on psychographics. The motivation for considering this indirect effect is that neither deal proneness nor store brand proneness research has had much success in obtaining consistent and strong associations with demographics. In addition, Mittal's (1994) and Urbany, Dickson, and Kalapurakal's (1996) findings suggest that demographics may be better predictors of psychographics than of deal proneness or store brand proneness per se.

Another important element of our framework is that the consumer's decision whether to use store brands or promotions is driven by economic benefits, hedonic benefits, and costs. This typology has a well-established tradition in the literature on shopping behavior. Researchers such as Blattberg and colleagues (1978), Narasimhan (1984), and Bawa and Shoemaker (1987) have used economic benefits and costs to characterize the deal prone consumer, whereas others, such as Shimp and Kavas (1984), Price, Feick, and Guskey-Federouch (1988), and Schindler (1989), have focused attention on hedonic benefits. Recent research brings together the economic and hedonic attributes in evaluating deals (e.g., Chandon, Wansink, and Laurent 2000) or studying other aspects of shopping (Mittal 1994; Urbany, Dickson, and Kalapurakal 1996).

Figure 1 also proposes that the benefits and costs of using store brands and promotions create associations between psychographics or demographics and these behaviors. The reason is that particular psychographic or demographic groups will be attracted to particular costs and benefits. This suggests an approach for generating the particular psychographics and demographics we study. We first generate a more specific list of benefits and costs. Then we generate the psychographic and demographic characteristics of consumers that would make them most attracted to these benefits and costs. We do this in Figure 2.

The specific benefits and costs we consider are listed on the left-hand side of Figure 2. The economic benefits are savings and product quality (Chandon, Wansink, and Laurent 2000). The hedonic benefits are entertainment, exploration, and self-expression (Bellizzi et al. 1981; Chandon, Wansink, and Laurent 2000; Schindler 1989). And the costs are switching, search, thinking, and inventory holding costs (Bawa and Shoemaker 1987; Blattberg et al. 1978; Urbany, Dickson, and Kalapurakal 1996).[2]

The right-hand side of Figure 2 shows the psychographic and demographic characteristics that are particularly suggested by each benefit and cost. We discuss these links and use prior theoretical and empirical research to hypothesize how consumers with each psychographic characteristic vary in their usage of store brands or national brand promotions. As we have noted previously, most prior research examines either promotion use or store brand use, but not both. As a result, there are a few variables for which we can specify directional hypotheses with respect to one behavior but not the other. There are also a few variables for which there is strong theoretical support for some role in deal or store brand usage but where evidence from prior research is mixed with respect to the direction of association. Given the integrative nature of our research, we discuss the evidence to date and include these variables in our empirical model even when prior research does not enable us to state unambiguous, directional hypotheses. We note, however, that results for such hypotheses are in that sense exploratory, and it would be valuable for further research to examine the convergent validity of our findings on these variables.

The Role of Psychographics

Savings. Price savings are relevant to consumers who are price conscious and perceive themselves as having financial constraints. Because both store brands and national brand promotions offer price savings, we expect price consciousness and financial constraints to be positively related to all three behaviors.

Product quality. Product quality is relevant by definition to quality-conscious consumers. Quality consciousness should deter consumers from using store brands, because such brands are perceived to be inferior in quality (Cunningham, Hardy, and Imperia 1982; Richardson, Dick, and Jain 1994). Quality consciousness should not particularly influence use of in-store or out-of-store promotions for national brands, because the consumer can obtain the quality that these brands deliver without being deal prone.

Entertainment. Entertainment is relevant to people who enjoy shopping. Consumers who enjoy shopping have been found to be heavier users of feature advertising and coupons (Kolodinsky 1990), perhaps because they enjoy making use of marketing information. We therefore expect a positive relationship of shopping enjoyment with out-of-store promotion use, as well as with in-store promotion use. The in-store relationship may not be as strong, but in-store promotions also provide marketing information that shopping enthusiasts would enjoy processing. There is no evidence to suggest that using store brands is related to the quest for shopping enjoyment. For example, Bellizzi and colleagues (1981) find that store brand buyers are not more likely to enjoy shopping than other consumers.

Exploration. Exploration evokes characteristics such as innovation, variety seeking, and impulsiveness. Innovativeness and variety seeking should be positively associated with deal usage, because deals encourage product trial (e.g., Montgomery 1971). We cannot make a clear prediction for the relationship of innovativeness with store brand use. It

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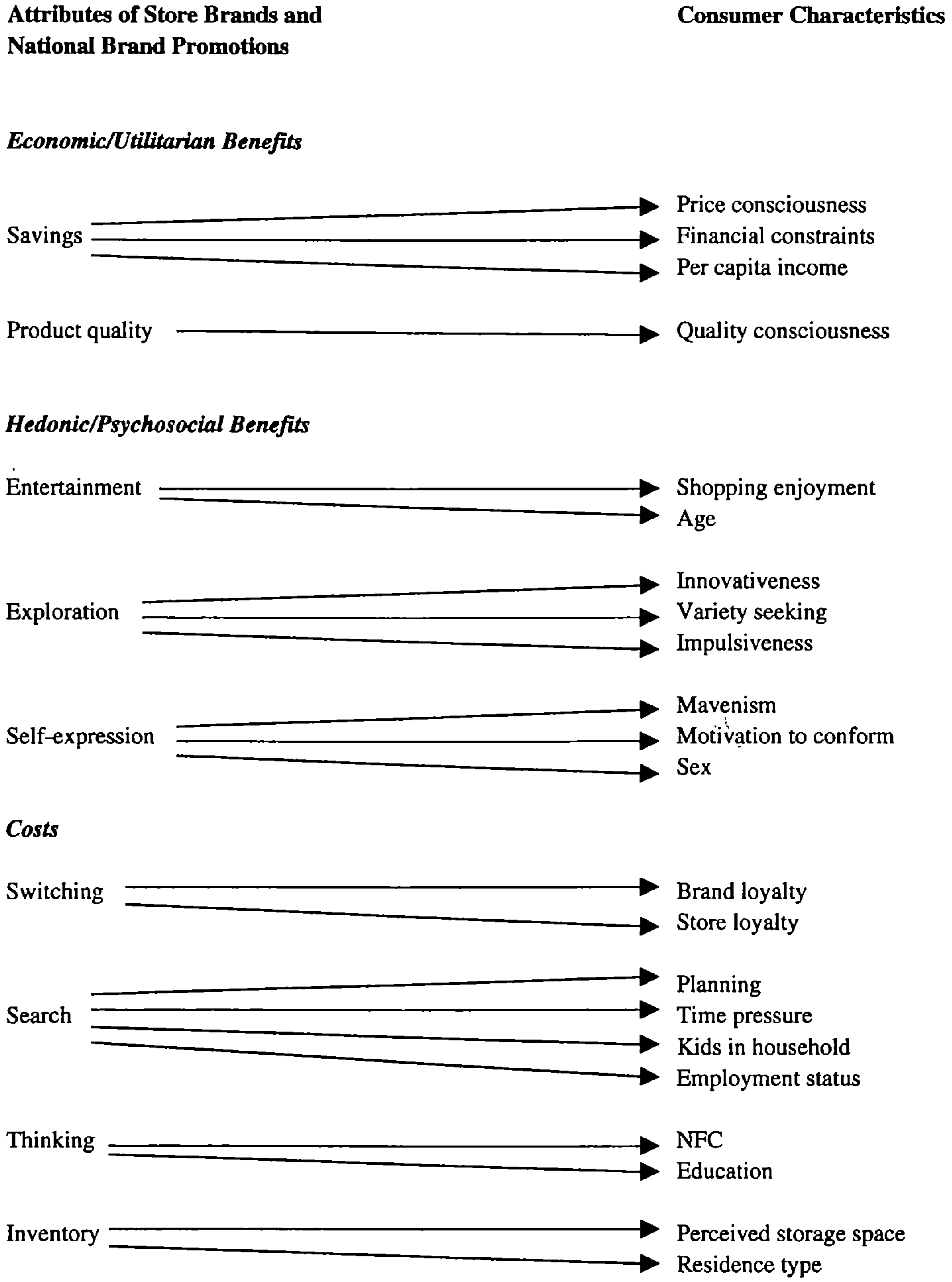
[2] Chandon, Wansink, and Laurent (2000) do not examine costs and list convenience as an economic benefit. Our typology includes the specific aspects of convenience in search, switching, thinking, and inventory costs.

FIGURE 2
Identifying Relevant Consumer Characteristics



will be positive if innovative consumers view store brands as new and untried (Granzin 1981) or negative if they view them as run-of-the-mill. Variety seekers should be less apt to use store brands, because regular use of store brands does not provide variety. Impulsiveness should be positively associated with in-store deal use but not with out-of-store deal use, because out-of-store deals require preparation before the shopping trip. We also find little reason to expect a relationship between impulsiveness and store brand usage. Store brands can be bought on impulse, but we do not expect store brands to be especially conducive to impulse behavior, as in-store promotions are.

Self-expression. Self-expression is salient to shopping mavens. Mavens are particularly attentive to media as a basis for their expertise (Higie, Feick, and Price 1987). They are more likely to read direct mail and local advertising (Higie, Feick, and Price 1987) and are heavier users of coupons (Price, Feick, and Guskey-Federouch 1988). We therefore expect mavens to be heavier users of out-of-store promotions. They should not be especially apt to use in-store promotions, which require less effort and therefore are less reflective of individual shopping expertise. Mavens attach extra importance to both quality and price (Williams and Slama 1995). Depending on which is stronger, there could be a positive or negative relationship between mavenism and store brand usage.

Self-expression is also related to consumers' motivation to conform to peer expectations. There is a strong theoretical and empirical basis for including motivation to conform. For example, Shimp and Kavas (1984) and Chandon, Wansink, and Laurent (2000) discuss the role of social recognition and conformity in deal usage, and Dick, Jain, and Richardson (1995) discuss the role of social approval in store brand usage. However, it is difficult to formulate directional hypotheses, because it is unclear what relevant others think of deal and store brand use. Both deal and store brand use have become common, and peers may consider them smart, so they may be positively related to motivation to conform. However, peers may look down on these behaviors as cheap, which would lead to a negative relationship.

Switching costs. Switching costs are high for brand-loyal or store-loyal consumers. We expect a negative relationship between in-store deal use and national brand loyalty, because in-store deals often require the consumer to switch brands (Bawa and Shoemaker 1987; Webster 1965). However, brand-loyal consumers can seek out coupons and specials for their favorite brands. Thus, out-of-store deal use may be less negatively, or even positively, related to national brand loyalty. Finally, national brand–loyal consumers by definition will be less likely to use store brands.[3]

Store loyalty should be negatively related with out-of-store deals, because these deals often require store switching (Bawa and Shoemaker 1987). There should also be a relationship between store loyalty and in-store promotions, but we are unable to specify the sign. Perceptions of retailer promotion activity have been found to correlate with store loyalty (Sirohi, McLaughlin, and Wittink 1998), which suggests a positive relationship. However, there is evidence that store-loyal people are less price sensitive (Kim, Srinivasan, and Wilcox 1999), which suggests a negative relationship. In contrast, store loyalty should be positively associated with store brand use, because store-loyal consumers trust their chosen store and become familiar with its store brands (Dick, Jain, and Richardson 1995; Richardson, Jain, and Dick 1996). The ability to buy a single brand across a wide range of product categories also facilitates shopping (Baltas and Doyle 1998; Steenkamp and Dekimpe 1997).

Search costs. Search costs are related to consumer planning and time pressure. Consumers who plan their shopping will be more apt to consider out-of-store promotions, because these promotions encourage planning. Indeed, there is evidence that consumers use out-of-store promotions to plan their shopping (Henderson 1985; NCH NuWorld 1999, p. 25; *Progressive Grocer* 1975). We therefore hypothesize a positive relationship between planning and out-of-store promotion use. We also hypothesize a positive relationship, though not as strong, between planning and in-store promotion. One way to take advantage of in-store promotions is for consumers to be highly conscious both of promotion schedules (Krishna, Currim, and Shoemaker 1991) and of their inventory levels so they know how much to buy to last until the next deal. Planners should be highly conscious of their inventory, and this should facilitate "deal-to-deal" buying. Planning may also play a role in store brand use, but previous research does not point to a clear direction. Omar (1996) finds a positive association, but Cobb and Hoyer (1986) find an ambiguous relationship, in which more extensive planners have less favorable attitudes toward store brands than less extensive planners.

Consumers under time pressure should be deterred from using out-of-store promotions. Bawa and Shoemaker (1987) emphasize that coupons require high effort, and it is likely that scanning and making use of weekly flyers requires the same. But time-pressured consumers may use in-store promotions and store brands to save time, as both provide easily recognizable cues for simplifying the buying process. Store brands provide additional convenience and time saving by facilitating shopping across several categories (Baltas and Doyle 1998; Steenkamp and Dekimpe 1997). Therefore, we expect time pressure to be negatively related to out-of-store promotion use and positively related to in-store promotion use and store brand use.

Thinking costs. Thinking costs are related to need-for-cognition (NFC). High NFC has been found to be associated with more extensive information processing in a variety of contexts (Inman, McAlister, and Hoyer 1990; Mantel and Kardes 1999; Zhang 1996). We expect NFC to be positively associated with out-of-store promotion use, because such deals require significant cognitive effort, for example, in selecting, clipping, and organizing coupons. We expect a negative relationship between NFC and in-store deal use, because low-NFC people respond to both signal-only promotions, such as displays, and price-off promotions, such as store specials, whereas high-NFC people respond only to price-off promotions (Inman, McAlister, and Hoyer 1990). The relationship between NFC and store brand use is not clear. It would depend on whether low-NFC people use the store brand label as a cue for good value or as a cue for low quality.

Inventory holding costs. Inventory costs are related to the perceived availability of storage space. Having sufficient storage space makes it easier for consumers to use both in-store and out-of-store national brand deals, because they can stock up on the product (Blattberg et al. 1978). In contrast, consumers who perceive storage space constraints may buy store brands because they are always available at a low price and therefore need not be stockpiled. Thus, perceived storage space should have a positive association with the use of both types of national brand promotions and a negative association with store brand use.

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[3] Although our hypotheses refer to national brand loyalty, a limitation of our data is that our measurement scale for brand loyalty does not refer specifically to national brands. However, we believe that consumers were thinking of national brands when they responded, because national brands are more salient. As a whole, they have higher market shares and higher loyalty as measured by share of requirements (Information Resources Inc. 1998).

In Table 1, we summarize our hypotheses about the relationship between psychographic characteristics and the three behaviors of interest. Viewed holistically, these individual hypotheses enable us to generate expectations about the fundamental question in our research; that is, Are these distinct behaviors or is there a lot of overlap between them? Table 1 suggests substantial overlap between users of in-store and out-of-store promotions. But even these two groups should be distinguishable on the basis of hedonic characteristics, such as impulsiveness and mavenism, and cost-related characteristics, such as time pressure and NFC. In contrast, Table 1 suggests much less overlap between store brand use and promotion use (in-store and out-of-store promotions taken collectively). Promotion users and store brand users should be clearly distinguishable on the basis of quality consciousness and several of the hedonic and cost-related characteristics.

The Role of Demographic Characteristics

Identification of demographic characteristics. The benefits and costs of store brand and deal use suggest seven demographic characteristics: income, employment status, children in the household, type of residence, age, sex, and education. Income is linked to savings benefits, employment status and children in the household are related to search costs, and type of residence is related to inventory holding costs. The remaining three demographics link to multiple benefits and/or costs. Education links not only to thinking costs but also to product quality, exploration, and search costs (e.g., Narasimhan 1984; Raju 1980; Urbany, Dickson, and Kalapurakal 1996). Age links not only to entertainment but also to exploration, self-expression, and search costs (e.g., Raju 1980; Urbany, Dickson, and Kalapurakal 1996). Sex links not only to self-expression but also to exploration and search costs (e.g., Feick and Price 1987; Schindler 1989). Because the purpose of Figure 2 is simply to identify the relevant consumer characteristics, we keep it simple by showing only one major link.

Relationship with store brand and deal usage. Much research has hypothesized direct relationships between demographics and store brand or deal proneness. However, these hypotheses often rely on the association between demographics and psychographics for theoretical support. For example, income is expected to be negatively related to deal use, because higher-income households are less price conscious. Similarly, full-time employment is expected to be negatively associated with deal use, because people who work full time are more pressed for time (e.g., Blattberg et al. 1978). And dwelling in a home rather than an apartment is expected to be positively associated with deal use, because homeowners have more storage space for stockpiling products. As a result, it is unclear what the direct relationship of demographic variables is with store brand or deal usage when the indirect influence through psychographics has been accounted for. Therefore, we do not propose a priori hypotheses about the direct relationship between demographics and these behaviors.

Relationship with psychographics. We can propose hypotheses about the relationship of some demographic variables with specific psychographics. First, we expect income to have a negative relationship with price consciousness and financial constraints. Second, we expect full-

TABLE 1
Summary of Hypothesized Relationships

	Dependent Variable		
Psychographic Characteristics	**Store Brand Usage**	**In-Store Promotion Usage**	**Out-of-Store Promotion Usage**
Related to Economic Benefits:			
Price consciousness	+	+	+
Financial constraints	+	+	+
Quality consciousness	–	0	0
Related to Hedonic Benefits:			
Shopping enjoyment	0	+	+
Innovativeness	?	+	+
Variety seeking	–	+	+
Impulsiveness	0	+	0
Mavenism	?	0	+
Motivation to conform	?	?	?
Related to Costs:			
Brand loyalty	–	–	?
Store loyalty	+	?	–
Planning	?	+	+
Time pressure	+	+	–
NFC	?	–	+
Perceived storage space	–	+	+

time employment and the presence of children to have positive relationships with time pressure. Third, we expect living in a house rather than an apartment or townhouse to have a positive relationship with storage space.

The remaining three demographic variables—age, education, and sex—can be related to several of the psychographic characteristics in Figure 2. For example, older people may be more likely to enjoy shopping and be mavens (Urbany, Dickson, and Kalapurakal 1996), but they may be less likely to seek variety (Raju 1980) or be pressured for time. More educated people may be less likely to be mavens (Feick and Price 1987), more pressured for time (Narasimhan 1984), and more likely to seek variety (Raju 1980). Women may be more likely to be shopping mavens and planners (Feick and Price 1987). Relationships of these three demographic variables with other psychographics can be conceived of as well. For example, education may be related to quality consciousness or NFC; age may be related to the motivation to conform to the expectations of others or NFC; and sex may be related to shopping enjoyment, innovativeness, impulsiveness, or time pressure. Therefore, we examine the relationship of these three demographic variables with all 15 psychographic variables.

Structural Model

We first specify Model A, in which use of store brands (sbuse), use of in-store promotions on national brands (inuse), and use of out-of-store promotions on national brands (outuse) are each influenced by the 15 psychographic characteristics. The error terms for the three equations are allowed to covary, because we expect that, like the included variables, some of the unobserved variables that influence one behavior may also influence the other behaviors:

$$
\begin{aligned}
\text{(1)}\quad \text{sbuse}_i &= \gamma_{1,0} + \gamma_{1,1}\text{pricecon}_i + \gamma_{1,2}\text{finconst}_i + \ldots \\
&\quad + \gamma_{1,15}\text{storage}_i + \varepsilon_{1i}, \\
\text{inuse}_i &= \gamma_{2,0} + \gamma_{2,1}\text{pricecon}_i + \gamma_{2,2}\text{finconst}_i + \ldots \\
&\quad + \gamma_{2,15}\text{storage}_i + \varepsilon_{2i}, \text{ and} \\
\text{outuse}_i &= \gamma_{3,0} + \gamma_{3,1}\text{pricecon}_i + \gamma_{3,2}\text{finconst}_i + \ldots \\
&\quad + \gamma_{3,15}\text{storage}_i + \varepsilon_{3i}.
\end{aligned}
$$

Next, we add the seven demographic characteristics identified in Figure 2 and obtain three additional model specifications depending on whether demographics have only a direct effect on the three behaviors, only an indirect effect through psychographics, or both a direct and an indirect effect. Model B, containing direct effects of demographics, is obtained by adding the demographic variables to each equation in Equation 1:[4]

$$
\begin{aligned}
\text{(2)}\quad \text{sbuse}_i &= \gamma_{1,0} + \ldots + \gamma_{1,16}\text{age}_i + \gamma_{1,17}\text{income}_i + \ldots \\
&\quad + \gamma_{1,22}\text{employ}_i + \mu_{1i}, \\
\text{inuse}_i &= \gamma_{2,0} + \ldots + \gamma_{2,16}\text{age}_i + \gamma_{2,17}\text{income}_i + \ldots \\
&\quad + \gamma_{2,22}\text{employ}_i + \mu_{2i}, \text{ and} \\
\text{outuse}_i &= \gamma_{3,0} + \ldots + \gamma_{3,16}\text{age}_i + \gamma_{3,17}\text{income}_i + \ldots \\
&\quad + \gamma_{3,22}\text{employ}_i + \mu_{3i}.
\end{aligned}
$$

We incorporate the indirect effects of demographics by specifying equations for each of the psychographics as a function of demographics. As discussed previously, we model relationships of income, employment status, children in the family, and residence type with specific psychographics, but allow age, education, and sex to affect all 15 psychographics. Thus, Model C, with indirect effects of demographics, is obtained by adding the following 15 equations for psychographics to Equation 1 and allowing covariation between their error terms:

$$
\begin{aligned}
\text{(3)}\quad \text{pricecon}_i &= \gamma_{4,0} + \gamma_{4,1}\text{age}_i + \gamma_{4,2}\text{educ}_i + \gamma_{4,3}\text{sex}_i \\
&\quad + \gamma_{4,4}\text{income}_i + \varepsilon_{4i}, \\
\text{finconst}_i &= \gamma_{5,0} + \gamma_{5,1}\text{age}_i + \gamma_{5,2}\text{educ}_i + \gamma_{5,3}\text{sex}_i \\
&\quad + \gamma_{5,4}\text{income}_i + \varepsilon_{5i}, \\
\text{timepres}_i &= \gamma_{14,0} + \gamma_{14,1}\text{age}_i + \gamma_{14,2}\text{educ}_i + \gamma_{14,3}\text{sex}_i \\
&\quad + \gamma_{14,4}\text{kids}_i + \gamma_{14,5}\text{employ}_i + \varepsilon_{14i}, \\
\text{storage}_i &= \gamma_{15,0} + \gamma_{15,1}\text{age}_i + \gamma_{15,2}\text{educ}_i + \gamma_{15,3}\text{sex}_i \\
&\quad + \gamma_{15,4}\text{home}_i + \varepsilon_{15i}, \\
\text{qualcon}_i &= \gamma_{5,0} + \gamma_{5,1}\text{age}_i + \gamma_{5,2}\text{educ}_i + \gamma_{5,3}\text{sex}_i + \varepsilon_{5i} \\
&\quad \ldots \text{ and} \\
\text{planning}_i &= \gamma_{18,0} + \gamma_{18,1}\text{age}_i + \gamma_{18,2}\text{educ}_i \\
&\quad + \gamma_{18,3}\text{sex}_i + \varepsilon_{18i}.
\end{aligned}
$$

Finally, Model D, with both direct and indirect effects of demographics, is obtained by combining Equations 2 and 3. Note that Models A and B are not nested within Model D even though Model D is the most general. This is because the psychographic variables are exogenous in Models A and B, whereas they are endogenous in Models C and D. Model A, however, is nested within Model B, and Model C is nested within Model D.

Data

We obtain data from a mall intercept consumer survey. The survey consisted of personal interviews with 319 adults who were intercepted at four shopping malls in Massachusetts at various times of day and on different days of the week. A professional market research firm conducted the interviews over a four-week period in the summer of 1998. Each interview lasted approximately 30 minutes, and respondents were given three scratch-and-win lottery tickets, each costing $1.00, as an incentive for participation. The conditions for inclusion in the survey were that the respondent must be at least 18 years of age and must do at least some of the grocery shopping for the household. The demographic profile of the sample is summarized in Table 2.

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[4] Some of the demographic characteristics—for example, employment status—are operationalized as a set of dummy variables in the empirical analysis. For simplicity of exposition at this stage, we simply represent each demographic characteristic as a single variable.

At the beginning of each interview, the interviewer provided the respondent with definitions and examples of (1) store brands, (2) national brands, (3) in-store promotions on national brands, and (4) out-of-store promotions on national brands. The definitions and examples were printed in bold capital letters on a card, and the card was placed in front of the respondent during the entire length of the interview. The interviewers were instructed to clarify any questions about the definitions of these four terms before proceeding with the interview. This procedure ensured that there was no confusion among respondents about what was meant by these terms.

The Appendix provides the items for all the constructs used in the study as well as all the demographic variables.

TABLE 2
Sample Demographics

Demographic Characteristic	Percentage of Sample
Sex	
Female	66.5%
Age	
<25 years	12.2%
25–34 years	25.7%
35–44 years	27.6%
45–59 years	23.2%
60–74 years	8.2%
>74 years	3.1%
Education Level	
High school or less	19.7%
Some college	29.2%
College	40.1%
Advanced degree	11.0%
Employment Status	
Homemaker	10.7%
Student	6.6%
Retired	6.0%
Employed full time or self-employed	61.7%
Employed part time or other	15.0%
Annual Household Income	
<$30,000	6.3%
$30,000–$45,000	13.9%
$45,000–$60,000	20.5%
$60,000–$75,000	25.9%
$75,000–$100,000	19.6%
$100,000–$150,000	12.0%
>$150,000	1.9%
Other Characteristics	
Household has kids under 12 years of age	35.1%
Live in a house (versus apartment)	67.7%

All constructs except demographic variables are measured on five-point scales. The national brand promotion and store brand usage scales measure frequency of use and are anchored by "never" and "very often," and all other scales are of the agree/disagree type and are anchored by "strongly disagree" and "strongly agree."[5]

Note that we need to measure the usage of store brands and the usage of promotions on national brands, not the feelings associated with them. Thus, our scales are fundamentally different from those in the deal proneness studies of researchers such as Lichtenstein, Netemeyer, and Burton (1990). Also, our research calls for consumer-level measures of store brand usage and national brand deal usage. Therefore, our scales are designed to assess a general usage level across product categories, though we recognize that usage also varies by product category, especially for store brands (Sethuraman and Cole 1997).

Items for many of the scales are taken either in part or in their entirety from the literature. Because we created some new scales and did not use some of the other scales in their entirety, we pretested all the scales with 40 respondents. The pretest led us to reword a few items and delete a few others that had low item-to-total correlations. We use EQS software (Bentler 1995) to estimate the structural equation model.

Structural Model Analysis

Measurement Model

We evaluate the reliability and validity of our constructs using confirmatory factor analysis. In Table 3, we list the constructs and reliability statistics. The composite reliability index has been shown to have advantages over Cronbach's alpha when the measures are not tau-equivalent (Raykov 1997). The table shows that the reliabilities of all the constructs are quite high. Only one Cronbach's alpha (planning) falls below Nunnally's (1978) cutoff of .70 for such scales.

To assess the dimensionality and validity of our constructs, we specify two confirmatory factor analysis models, one for the 11 items related to the three behaviors (i.e., store brand use, in-store national brand promotion use, and out-of-store national brand promotion use) and another for the 40 items related to the 15 psychographic constructs. For both models, we do not allow any cross-loadings, and we do not allow measurement errors to covary. Furthermore, all interfactor covariances are freely estimated. Even under the high standards of measurement quality imposed by these conditions and with 15 constructs in the psychographics measurement model, the fit of both models is acceptable. The robust comparative fit index is .914 for the store brand and promotion use measurement model and .916 for the psychographics measurement model. Similarly, the standardized root mean square residual is .094 for the former model and .053 for the latter. The fit of the former model is significantly improved if measurement error covariances between the items related to store flyer use are allowed. We

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[5] The Appendix lists the psychographic scales in the order in which they were discussed in the previous section. Their order was random in the actual survey.

TABLE 3
Reliabilities of Constructs

Construct	Relevant Literature for Scale Items	Number of Items	Cronbach's Alpha	Composite Reliability
Characteristics Associated with Economic/Utilitarian Benefits				
Price consciousness	Darden and Perreault (1976)	3	.790	.826
Financial constraints	Urbany, Dickson, and Kalapurakal (1996)	2	.808	.817
Quality consciousness		3	.842	.850
Characteristics Associated with Psychosocial/Hedonic Benefits				
Shopping enjoyment	Urbany, Dickson, and Kalapurakal (1996)	3	.768	.812
Shopping mavenism	Feick and Price (1987); Urbany, Dickson, and Kalapurakal (1996)	3	.852	.876
Innovativeness	Darden and Perreault (1976)	3	.808	.810
Impulsiveness	Narasimhan, Neslin, and Sen (1996)	2	.854	.856
Variety seeking		2	.712	.789
Motivation to conform	Bearden, Netemeyer, and Teel (1989)	3	.803	.824
Characteristics Associated with Costs				
Planner		2	.610	.616
Time pressure	Hawes and Lumpkin (1984)	3	.861	.870
Need for cognition	Cacioppo and Petty (1982)	3	.878	.882
Perceived storage space		2	.921	.933
Brand loyalty		3	.864	.865
Store loyalty		3	.875	.876
Dependent Behaviors				
Store brand usage		3	.905	.906
In-store promotion usage		4	.760	.767
Out-of-store promotion usage		4	.861	.799

free up these covariances because doing so makes conceptual sense. As a result, the robust comparative fit index increases from .914 to .964, whereas the standardized root mean squared residual decreases from .094 to .074. Although model fit could be improved by freeing up some other measurement paths, no modification indices stand out as being substantially bigger than the others. Therefore, we do not make further model modifications simply to boost the fit of the models (see Baumgartner and Homburg 1996).

Loadings of all the items on their factors are strong. The magnitude of their t-statistics ranges from 6.07 to 29.26. On average, 63% of the variation in an item is explained by its factor. The magnitude of interfactor correlations ranges from .009 to .618, and none of the 90% confidence intervals around the correlations include 1 (or –1), thus supporting the discriminant validity of our constructs (Anderson and Gerbing 1988; Bagozzi 1980).

Comparison of Competing Models

In Table 4, we summarize the fit of Models A, B, C, and D. Although the comparative fit indices are not as impressive as those of some other structural equation models, we note that our models contain many more constructs than the typical model (see Baumgartner and Homburg 1996), and many of our hypotheses are new. Some of the structural paths are hypothesized to be insignificant, but we do not constrain them to zero because our purpose is to test the hypotheses, not to maximize model fit. We use the fit indices not so

TABLE 4
Fit of Four Alternative Model Specifications

	Effect of Demographics on Store Brand Usage and Promotion Usage			
Fit Measure	None (Model A)	Direct Only (Model B)	Indirect Only (Model C)	Both (Model D)
χ^2 (d.f.)	2809.64 (1427)	2758.76 (1397)	2974.41 (1523)	2921.708 (1493)
Robust comparative fit index	.891	.893	.883	.886
RMSEA [90% confidence interval]	.055 [.052, .058]	.055 [.052, .058]	.055 [.052, .058]	.055 [.052, .058]
AIC	–44.359	–35.241	–71.593	–64.292
CAIC	–6844.286	–6692.212	–7328.979	–7178.72
ECVI	11.754	11.782	11.668	11.691

much to evaluate a particular model on an absolute level as to compare the four competing models. Note also that these measures assess covariance fit, whereas variance fit, the percentage of variance in the dependent behaviors explained by the independent constructs, and the meaningfulness of individual structural parameters are important for our study. Baumgartner and Homburg (1996) caution that emphasis on covariance fit can detract from a "proper concern" for variance fit. As we show subsequently, the structural models perform well on the latter dimension.

As mentioned previously, the four models are not nested. Therefore, we provide four measures that can be used to compare and rank-order nonnested models, apart from the χ^2 statistic and the robust comparative fit index. These measures are root mean square error of approximation (RMSEA; Steiger 1990), Akaike information criterion (AIC; Akaike 1987; Jöreskog 1993), corrected Akaike information criterion (CAIC; Bozdogan 1987), and the expected cross-validation index (ECVI; Browne and Cudeck 1989). Definitions of these measures are available in recent books on structural equation models (e.g., Maruyama 1998).

A test for the difference in χ^2 statistics between Models A and B concludes that Model B is superior; that is, adding direct effects of demographics improves model fit. However, other measures of fit show that this improvement is not very strong. When we consider measures such as AIC and CAIC, which penalize models with a large number of parameters more strongly than the χ^2 test does (Hayduk 1996), we conclude that adding direct effects of demographics does not improve the model. However, when we compare Model C with either Model A or Model B, there is a vast improvement in these measures of fit. Thus, demographic variables improve model fit, but modeling indirect effects is much better than modeling direct effects.

To determine whether we should include both direct and indirect effects or only indirect effects, we compare Models C and D. The χ^2 test concludes that Model D is superior. However, the improvement is not much, because Model C has better AIC, CAIC, and ECVI. Also, we find that only 5 of 30 direct demographic effects estimated in Model D are statistically significant. Thus, we conclude that the more parsimonious Model C is a better representation of the effect of demographics. Therefore, we proceed with results from Model C.[6]

Role of Demographic Characteristics

In Table 5, we present the standardized parameters and model R^2 for the relationship of demographics with each of the 15 psychographic characteristics. Although the R^2s are not high, at least one demographic variable has a significant relationship with each of the psychographic variables except brand loyalty. All five of our specific hypotheses about the effect of demographics on psychographics are supported. Consumers with higher incomes are less price conscious and less financially constrained. People who are employed full time and those with children in the household are more pressured for time. And people who live in a house perceive that they have more storage space.

As we expected, age, sex, and education are associated with many psychographic variables. Older consumers are more likely to be shopping mavens, have higher motivation to conform with the expectations of others, are less pressured for time, and have more storage space. Women are

TABLE 5

Effect of Demographic Variables on Psychographic Characteristics

Dependent Variable	Structural Parameters (Standardized)	R^2
Price consciousness	.094 age – .044 sex – .100 education – .172** pcincome	.051
Financial constraints	–.045 age + .052 sex – .317*** education – .202*** pcincome	.184
Quality consciousness	.070 age + .032 sex + .206*** education + .081 pcincome	.063
Shopping enjoyment	–.075 age + .001 sex – .135*** education	.022
Innovativeness	.064 age + .106* sex + .288*** education	.092
Variety seeking	.093 age – .044 sex – .068 education	.015
Impulsiveness	–.009 age + .106*sex + .079 education	.016
Mavenism	.139** age + .192*** sex + .041 education	.061
Motivation to conform	.148** age + .073 sex – .002 education	.030
Brand loyalty	.037 age + .073 sex + .066 education	.010
Store loyalty	.080 age + .133*** sex – .024 education	.027
Planning	.035 age + .137**sex + .070 education	.027
Time pressure	–.212*** age + .073 sex + .065 education + .039 kids – .068 homemaker – .138** student – .219*** parttime – .103*retired	.118
NFC	.071 age – .105* sex + .192*** education	.052
Perceived storage space	.100* age + .017 sex + .227*** education + .170*** house	.096

*$p < .10$.
**$p < .05$
***$p < .01$.
Notes: pcincome = per capita income, kids = has kids under 12 years of age, house = lives in a house.

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[6] There are no substantive differences in the estimated psychographic coefficients for Model C and Model D. Complete results for Model D are available from the first author on request.

more likely than men to be innovative, impulsive, shopping mavens, and planners. They are also more store loyal and have lower NFC. Finally, more educated consumers are less financially constrained, more quality conscious, more innovative, and have higher NFC. They do not enjoy shopping and have more storage space.

Thus, the relationships between demographic and psychographic characteristics are both significant and intuitively appealing. Although the direct effect of demographic variables on store brand use and in-store and out-of-store promotion use is weak, these significant indirect effects show that demographics play a role in determining shopping behavior.

Role of Psychographic Characteristics

In Table 6, we present standardized parameters and model R^2 for store brand use, in-store promotion use, and out-of-store promotion use. The models explain approximately 40% of the variation in each behavior. This level of explanatory power compares favorably with other studies of deal proneness or store brand proneness.

In Table 6 we also present χ^2 statistics for each psychographic variable to test whether the coefficient of that psychographic variable is equal for each of the three behaviors. That 11 of the 15 χ^2 statistics are significant shows that most of the psychographic variables have significantly different associations with the three behaviors. Indeed, many of the coefficients have opposite signs for one versus the other behavior.

The first column of coefficients in Table 6 shows that most of our hypotheses about the psychographic correlates of store brand use are supported. There is only one instance in which a coefficient is statistically significant and has the "wrong" sign: Variety seeking is positively associated with store brand use. Perhaps variety seekers use store brands for a change of pace. Where we had directional hypotheses, the coefficient has the right sign and is significant except in one case (impulsiveness). Where we did not have directional hypotheses, the coefficients are insignificant except for NFC, which has a significantly positive coefficient. Overall, economic benefit and cost-related characteristics are the strongest correlates of store brand usage. Store brand users are financially constrained, highly price conscious, and not very quality conscious; they are variety seekers; they have storage and time constraints, high store loyalty, and high NFC.

In-store promotion users have fewer distinguishing characteristics. This is not surprising. Because in-store deals require little effort, they attract a variety of people. All the significant coefficients have the hypothesized sign. However, the coefficients of many characteristics are not significant. Overall, in-store promotion users are financially constrained, are impulsive, enjoy and plan their shopping, and have plenty of storage space.

Several of our hypotheses about characteristics of out-of-store deal users are supported. All significant coefficients, except for NFC, are of the hypothesized sign. It appears that low-NFC people use out-of-store promotions as decision-simplifying cues (e.g., Henderson 1985). In both cases in which we could not advance a directional hypothesis, the coefficients are significant. Users of out-of-store promotions have low motivation to conform to others' expectations and are brand loyal. The latter supports our conjecture that users of this type of promotion seek out deals on their favorite brands. Overall, hedonic benefit and cost-related characteristics are the strongest correlates of out-of-store promotion use. Users of these promotions enjoy shopping, are shopping mavens, and do not consider it necessary to conform to the expectations of others; they are brand loyal but not store loyal; they plan their shopping; they have low NFC and plenty of storage space.

This analysis shows that there are distinct differences between the psychographic correlates of store brand use, in-store national brand promotion use, and out-of-store national brand promotion use. As we hypothesized, however, the correlates of in-store and out-of-store deal use are the most similar, whereas the correlates of store brand and out-of-store promotion use are the most dissimilar. Store brand users are the opposite of out-of-store promotion users on many fronts, for example, quality consciousness, store loyalty, NFC, and storage space. In line with these patterns, the correlation between in-store and out-of-store promotion coefficients is +.64, that between store brand and in-store promotion coefficients is –.30, and that between store brand and out-of-store promotion coefficients is –.57.

Segmentation Analysis

Defining the Segments

The previous analysis shows that store brand use, in-store promotion use, and out-of-store promotion use are driven by different psychographic characteristics. In this section, we determine how these differences produce different market segments. We cluster-analyze the sample using factor scores on store brand use, in-store promotion use, and out-of-store promotion use. We use K-means cluster analysis on the basis of Euclidean distances (Anderberg 1973). In Table 7, we summarize the key measures for evaluating the three-, four-, five-, and six-cluster solutions.

Table 7 shows that all measures improve substantially from the three- to the four-cluster solution. However, adding further clusters reduces the pseudo F-statistic (Calinski and Harabasz 1974), which has been shown to be one of the best ways to determine the number of clusters in a data set (Milligan and Cooper 1985). Also, the rate of increase in the other two measures is much lower. Furthermore, our examination of the cluster means shows that the four-cluster solution adds substantial insight over the three-cluster solution by identifying a very different cluster, whereas the fifth and sixth clusters separate out relatively minor gradations of store brand and promotion use. We therefore use the four-cluster solution.

Before going further, we examine the stability of the four-cluster solution in two ways. First, we use several random starting cluster seeds and find that the substantive nature of the clusters is not sensitive to them. Second, we use McIntyre and Blashfield's (1980) cross-validation procedure, which has been recommended by Punj and Stewart (1983). Specifically, we split our data into two random halves, perform cluster analysis on the first split-half, and use the Euclidean distances from the resulting cluster cen-

TABLE 6
Effects of Psychographic Characteristics (Standardized Coefficient Estimates)

	Dependent Variable			
Psychographic Characteristic	**Store Brand Usage**	**In-Store Promotion Usage**	**Out-of-Store Promotion Usage**	**χ^2 Statistic[a] (2 d.f.)**
Economic Benefits				
Price consciousness	.211*** (3.01)	.057 (.68)	–.098 (–1.30)	12.06***
Financial constraints	.121* (1.80)	.358*** (3.94)	.115 (1.56)	11.87***
Quality consciousness	–.288*** (–3.36)	.007 (.07)	.148 (1.58)	12.30***
Hedonic Benefits				
Shopping enjoyment	.008 (.11)	.173* (1.91)	.252*** (2.99)	2.41
Innovativeness	.007 (.10)	.060 (.72)	–.024 (–.33)	1.03
Variety seeking	.109* (1.70)	–.031 (–.39)	.095 (1.36)	2.97
Impulsiveness	–.098 (–1.23)	.363*** (3.47)	.090 (1.02)	15.14***
Mavenism	.074 (1.13)	–.109 (–1.31)	.124* (1.67)	7.89**
Motivation to conform	.070 (1.19)	–.081 (–1.11)	–.169*** (–2.51)	5.95*
Costs				
Brand loyalty	–.093 (–1.28)	.015 (.17)	.159* (1.96)	5.73*
Store loyalty	.148*** (2.41)	–.123 (–1.62)	–.124* (–1.82)	10.02***
Planning	–.083 (–.96)	.492*** (3.86)	.412*** (3.58)	14.99***
Time pressure	.108* (1.94)	.041 (.60)	–.020 (–.32)	3.66
NFC	.097* (1.65)	–.017 (–.24)	–.208*** (–3.04)	12.09***
Perceived storage space	–.102* (–1.84)	.192*** (2.74)	.214*** (3.30)	11.41***
R^2	.402	.397	.448	—

[a] Statistic for testing equality of coefficients across the three equations
*$p < .10$.
**$p < .05$.
***$p < .01$.
Notes: t-statistics are in parentheses under coefficient estimates.

troids to assign respondents in the second split-half to clusters. We then examine the agreement between this assignment and a cluster analysis performed on the second split-half sample. We find that there is agreement between the assignments in 86% of the cases. These results provide evidence that our clusters are reliable.

We describe the four clusters in our sample in Table 8. The first and second clusters, comprising more than one-third of the sample, clearly represent separate deal-focused and store brand–focused market segments. The third cluster, consisting of a little less than one-third of the sample, represents a "use-all" market segment. Cluster 4, also almost one-third of the sample, represents a "use-none" market segment.

This segmentation is quite consistent with our structural model results. The specific psychographic associations and the correlation pattern among the coefficients in the structural model suggested a store brand–focused segment and indicated that in-store and out-of-store users could be combined into a deal-focused segment. There is also enough in common among all three behaviors to produce a segment that partakes in all of them, and, of course, there is a segment that partakes in none.

Predicting Segment Membership

To predict segment membership, we compute the normalized Euclidean distance of each respondent from each of the four cluster centroids and multiply by –1 to obtain proximity rather than distance. We then regress the four proximity measures on the psychographic variables. Normalization ensures that an observation cannot move closer to (or farther away from) all four clusters simultaneously. For logical consistency, we constrain the coefficients of each psychographic variable to add to zero across the four equations.[7] A significant coefficient shows that the variable is a good predictor of segment membership, and a positive sign increases the likelihood of its being in a given segment relative to the other segments.

Although the results of these segment regressions should be somewhat consistent with the structural model results in Table 6, we also expect some differences. First, the deal-focused and use-all segments in the segmentation analysis combine both in-store and out-of-store deal use. Second, the deal-focused and store brand–focused segments contain only hard-core users. Multiple users have been separated out into the use-all segment. Third, the use-all segment should be difficult to predict, because it involves behaviors that have been shown to relate with opposite signs to various psychographics.

In Table 9, we summarize the results. The table shows that the psychographics have significant overall discriminatory power for all four clusters; adjusted R²s range from .14 to .31.

Membership in the deal-focused segment can be predicted by most of the characteristics that were significant in the structural equation model for predicting in-store or out-

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[7] We also performed four logistic regressions using the dichotomous cluster membership variables, one for distinguishing each cluster from the other three. We did not find any substantive differences in conclusions, though there were fewer significant coefficients in the logistic regressions. We believe that using the continuous proximity variables is preferable, because they retain more information than the dichotomized cluster membership variables. However, results of the logistic regressions are available from the first author on request.

TABLE 7
Cluster Analysis Summary

	Store Brand Usage		In-Store Promotion Usage		Out-of-Store Promotion Usage		Overall		
Number of Clusters	R²	Between/ Within Variance	R²	Between/ Within Variance	R²	Between/ Within Variance	R²	Between/ Within Variance	F-Statistic
3	.650	1.857	.366	.577	.294	.417	.528	1.121	177.05
4	.703	2.365	.544	1.193	.518	1.077	.637	1.755	184.28
5	.775	3.436	.617	1.608	.522	1.092	.699	2.322	182.25
6	.812	4.304	.633	1.724	.573	1.339	.733	2.743	171.71

TABLE 8
Description of Four Clusters

	Mean Factor Score for			
Cluster Number	Store Brand Usage	In-Store Promotion Usage	Out-of-Store Promotion Usage	Number of Observations
1	–.958	.440	.443	51
2	.987	–.340	–.305	68
3	.393	.412	.242	97
4	–.547	–.382	–.246	103

TABLE 9
Psychographic Correlates of Segments

	Standardized Coefficient in Regression for Proximity to			
Variable	Cluster 1 Deal-Focused	Cluster 2 Store Brand–Focused	Cluster 3 Use-All	Cluster 4 Use-None
Price consciousness	–.119**	.224***	.028	–.178***
Financial constraints	.055	–.101*	.190***	–.104*
Quality consciousness	.270***	–.229***	–.148*	.103
Shopping enjoyment	.097**	–.103*	.123*	–.095
Innovativeness	.018	.028	–.069	.001
Variety seeking	–.084*	.066	.108**	–.081
Impulsiveness	.138**	–.168***	.166**	–.096
Mavenism	–.034	.157***	.007	–.175***
Motivation to conform	–.167***	.135***	.120**	–.081
Brand loyalty	.123**	–.120**	–.048	.050
Store loyalty	–.129***	.150***	–.004	–.037
Planning	.178***	–.252***	.233***	–.096
Time pressure	–.075*	.049	.152***	–.109**
NFC	–.109**	.064	.003	.046
Perceived storage space	.179***	–.145***	.062	–.084
Adjusted R^2	.309	.291	.140	.168

*$p < .10$.
**$p < .05$.
***$p < .01$.

of-store promotion usage. These characteristics include impulsiveness, shopping enjoyment, planning, storage availability, motivation to conform, brand loyalty, store loyalty, and NFC. This is intuitively appealing because members of this segment use both in-store and out-of-store promotions and these behaviors are similar enough that the influences of most characteristics do not cancel one another. In addition, consumers who are highly price conscious do not focus exclusively on deals and instead gravitate toward the store brand or use-all segments. However, quality-conscious consumers avoid the store brand and use-all segments and shift their attention to deals. This reinforces the role of deals as a means to deliver a quality benefit (Chandon, Wansink, and Laurent 2000).

It makes sense that the signs of the coefficients for predicting membership in the store brand–focused segment are the same as they are in the structural equation model for 13 of the 15 psychographics. Many of the highly significant variables in the structural equation model—price consciousness, quality consciousness, store loyalty, and storage space—are also highly significant in the prediction equation. In addition, membership in this segment can be predicted on the basis of lower shopping enjoyment, less impulsiveness, more mavenism, more motivation to conform, less brand loyalty, and less planning.

Note that the lowest R^2 is for the use-all segment. This is to be expected because this segment is an amalgam of behaviors that the structural model shows are generated by different psychographic factors. Membership in this segment is more likely if the consumer is financially constrained, is not quality conscious, enjoys shopping, is variety seeking and impulsive, is motivated to conform to peer pressure, plans shopping, and feels time pressure. In summary, people in this group want to save money, but they also want to save time and they value hedonic benefits, so they make the best of both store brands and deals.

Finally, the use-none segment is a diverse group and can be distinguished from the rest of the market in only a few ways. Not surprisingly, members of this group are neither price conscious nor financially constrained. They are not shopping mavens either, nor are they pressured for time. Therefore, they are not attracted to either the monetary or time savings promised by promotions and store brands. They are not drawn to these behaviors by the self-expressive desires that shopping mavens have.

Conclusion

Summary of Findings

We have investigated the extent to which store brands and national brand promotions attract the same consumers. To do so, we have employed a structural model to study the characteristics of consumers who buy store brands, national brands on in-store promotions, or national brands on out-of-store promotions. We then clustered consumers into segments on the basis of their use of store brand and national brand promotions and distinguished between the segments using the consumer characteristics from the structural model.

Our structural model analysis shows that the impact of demographics on these behaviors is funneled through psychographics instead of being direct. Furthermore, the psychographic drivers of store brand use, in-store promotion use, and out-of-store promotion use differ substantially. The biggest difference in psychographic drivers is between store-brand and promotion usage, especially out-of-store promotion usage. Store brand use is particularly associated with price consciousness, low quality consciousness, and store loyalty. Store brand users thus transfer their store loyalty into saving money, even at the expense of quality.

Out-of-store promotion use, in contrast, is associated with higher shopping enjoyment and mavenism and less pressure to conform to the expectations of others. Heavy users of these promotions plan their shopping, are willing to switch stores but not brands, have plenty of storage space, and have low NFC. Thus, the hedonic aspect of promotions is more salient to them than to store brand users, and their costs are low, so they are willing to incur the effort involved in using promotions.

In-store promotion use is driven by psychographics that are similar to those that drive out-of-store promotion use, especially shopping enjoyment, planning, and available storage space. However, in-store deal users differ in that they feel more financially constrained; are impulsive; and are not driven by mavenism, motivation to conform, and NFC. An interesting aspect of in-store promotion usage is that both impulsive and planning orientations lead to the same behavior. This is a sensible result. Consumers can make use of in-store promotions by either buying on impulse or planning to use these promotions.

Overall, our structural equation model shows that store brand usage is quite different from either in-store or out-of-store promotion usage, whereas in-store and out-of-store promotion usage share several similar drivers. It makes sense, then, that our cluster analysis reveals a store-brand focused segment and a general deal-focused segment. In addition, however, there is a well-defined segment that partakes in all three behaviors, as well as a segment that partakes in none. Membership in the store brand–focused segment can be predicted on the basis of many of the psychographics that drive store brand purchasing in general. Membership in the deal-focused segment can be predicted by a combination of the psychographics that predict these behaviors separately. The use-all segment is the least easy to predict, because it combines three behaviors that are driven in opposite directions by some psychographics.

Our analysis provides important insight on whether store-brand users and deal users are different market segments. These behaviors are driven by different psychographics, and there are market segments that focus exclusively on one behavior or the other. In that sense, they are different market segments. However, the delineation is not so sharp that it precludes a market segment that partakes in both store brands and national brand promotions. Indeed, we find that a significant portion of the market belongs to this segment.

Implications for Researchers

There are several implications of our work for researchers. First, we have shown that not only deal buying but also store brand buying is driven by the economic/utilitarian returns, psychosocial/hedonic returns, and costs that have been conceptualized by researchers such as Shimp and Kavas (1984), Urbany, Dickson, and Kalapurakal (1996), and Chandon, Wansink, and Laurent (2000). Our findings support the use of this framework to study the behavior of consumers who seek better value in the marketplace.

Second, we have shown that though demographics may not be effective for directly predicting these three behaviors, they do have a significant association with psychographic characteristics and are therefore useful in segmentation, targeting, and communication. For example, our findings buttress prior work that shows that women value self-expression and exploration more than men do (e.g., Feick and Price 1987; Urbany, Dickson, and Kalapurakal 1996). As might be expected, education is positively related with quality consciousness and NFC, full-time employment and having young children are associated with time pressure, and higher income is associated with lower financial constraints and price consciousness.

A third implication relates to our conceptualization of store brand usage as a consumer-level rather than a category-level characteristic. There are certainly differences in the use and perceptions of store brands across categories and retailers (Sethuraman and Cole 1997). However, our success in characterizing store brand users and distinguishing them from deal users on the basis of psychographic characteristics shows that consumers have overarching perceptions about using store brands that generalize across product categories.

Fourth, our work demonstrates the value of jointly examining multiple related behaviors (for other work in this spirit, see Kahn and Raju 1991). Using a common set of variables and one method to study these clearly related behaviors has enabled us to make direct comparisons among their antecedents without being hindered by noncomparable measures or methods.

Finally, we reveal some important specific relationships between consumer psychographics and the use of store brands and/or deals. For example, we show that planning and impulsiveness can go together and that in-store promotion usage is consistent with both tendencies. This dual role warrants further investigation. We find that brand-loyal consumers are more likely to buy national brands using out-of-store promotions. This must be because they selectively seek out and use promotions on the brands they regularly buy. In general, the positive associations between brand loyalty and deal use and between storage availability and deal use suggest that a significant role of out-of-store promotions is to induce loyal users to stock up on the brand. This finding is somewhat at odds with the notion that the predominant effect of promotions is on brand switching (e.g., Gupta 1988). Consistent with our findings, however, recent research has found that stockpiling and stockpiling-related consumption play a more important role than was previously thought, though switching does account for the majority of the promotion's effect (see Ailawadi and Neslin 1998; Bell, Chiang, and Padmanabhan 1999; Bucklin, Gupta, and Siddarth 1998; Dillon and Gupta 1996). Furthermore, the decomposition of the promotion's effect may differ by type of promotion. Our results suggest that displays and in-store specials may induce more brand switching, whereas coupons and other out-of-store promotions may be more likely to attract consumers who are loyal to the brand. In any event, further research is needed to reconcile our findings with the brand switching effect of promotions.

Implications for Managers

The major implication for managers is that manufacturers and retailers have the opportunity either to avoid each other or to compete head to head. Manufacturers can target the deal-focused segment, and retailers can target the store brand–focused segment. These strategies could reduce the tug-of-war between manufacturers and retailers. However, if manufacturers and retailers both target the use-all segment, it can exacerbate competition within the channel. Our analysis should help both parties design their programs after they have decided which segments to target. For example, manufacturers can target the deal-focused segment by appealing to quality-conscious consumers who stock up on their favorite brands. This means that the promotion should include a strong advertising message to trigger the quality considerations. If the manufacturer wants to encourage stockpiling—for example, to preempt a competitor—it can do so with this segment by suggesting large purchase quantities (Wansink, Kent, and Hoch 1998). The promotion can be designed as an impulse purchase or a planned purchase. That this target group may already be loyal to the brand means that these promotions should be seen more as customer retention than acquisition tools. This explains why such promotions may not pay off in the short run. That this target group is not store loyal may mean that manufacturers can run cooperative promotions with retailers, the carrot for the retailer being that these promotions will increase store traffic.

The retailer's store brand–focused segment is quite distinct. It contains store-loyal, price-conscious customers who are not quality conscious and are neither shopping experts nor stockpilers. Retailers can access this group through their frequent shopper programs, which can be used to identify store-loyal customers, thus avoiding the deal-focused and use-all segments. For the store brand–focused group, it would be appropriate to stress the relatively consistently low store brand price, so consumers do not need to stock up. Retailers should stress the simplicity of buying store brands, because consumers in the store brand segment are not expert shoppers and do not plan their shopping or enjoy it.

Another set of implications for managers relates to the desirability of using HI–LO versus everyday low pricing.[8] Our results imply that the best strategy for store brands is to set an everyday low price that is close to the promoted price of national brands. Customers in the store brand–focused segment do not plan or enjoy shopping, so a HI–LO pricing strategy would dissuade them from using store brands. In contrast, national brands would benefit from a HI–LO strategy. Manufacturers can use this strategy to price discriminate and to compete with store brands for the use-all segment. The use-none segment will buy national brands at the regular price, whereas the deal price will enable national brand manufacturers to compete with other national brands for the deal-focused segment and with store brands for the use-all segment.

Therefore, our answer to the question whether manufacturers can combat the store brand threat effectively through promotions is a partial yes. If manufacturers want to battle store brands for market share, they can target the use-all segment. They can do so with price- and convenience-oriented messages and in-store displays designed to encourage impulsive purchases. However, this will work only partially. There is still a segment that exclusively buys store brands and has very different characteristics than promotion users do. These people are not impulsive, do not plan, and do not stockpile. This segment seems inaccessible to the types of promotions commonly used by manufacturers. Our conclusion here is consistent with the mixed view of whether manufacturer promotions reduce store brand share. For example, Blattberg and Wisniewski (1989) find that promotions are effective at combating store brands, whereas Hoch and Banerji (1993) find that they are not.

In conclusion, our results contribute to the study of store brand and promotion usage conceptually, substantively, and managerially. Conceptually, we reinforce the economic benefits/hedonic benefits/costs framework and support the role of demographics as an indirect rather than direct cause of these behaviors. Substantively, we find that store brands and national brand promotions attract consumers with distinctly different psychographic profiles; the national brand promotion user profile relates more to hedonic benefits and costs, whereas the store brand user profile relates more to economic benefits and costs. Store brand and national brand promotion usage are therefore different consumer behaviors. Managerially, we suggest that manufacturers and retailers can avoid or escalate conflict depending on which segments they target; that promotions are only a partial way for manufacturers to address the private label threat; and that the psychographic characteristics of store brand and promotion users make everyday low price a promising strategy for store brands, whereas HI–LO pricing might be better for national brands. There is still much to do in this area, as we pointed out previously. This work is important because the way manufacturers and retailers play out their dual roles as competitors and partners, which includes their promotion and store brand strategies, will define the twenty-first-century marketplace.

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[8] We thank an anonymous reviewer for suggesting the insights stated in this paragraph.

APPENDIX
Survey Items

1. Store Brand Usage Scale
I buy store brands.
I look for store brands when I go shopping.
My shopping cart contains store brands for several products.

2. Out-of-Store National Brand Promotion Usage Scale
I clip coupons for national brands from newspapers and magazines.
I take along coupons for national brands and use them when I go shopping.
I scan store flyers for sales on national brands before going shopping.
I use store flyers to decide what to buy and where to shop.

3. In-Store National Brand Promotion Usage Scale
I am influenced by special displays of national brands in the store.
I use a coupon if I see it on a package or in the store.
I pick up and use the store flyer when I am shopping in the store.
I take advantage of specials on national brands in the store.

4. Psychographic Characteristics

Price Consciousness
I compare prices of at least a few brands before I choose one.
I find myself checking the prices even for small items.
It is important to me to get the best price for the products I buy.

Financial Constraints
My household budget is always tight.
My household often has problems making ends meet.

Quality Consciousness
I will not give up high quality for a lower price.
I always buy the best.
It is important to me to buy high-quality products.

Shopping Enjoyment
I think grocery shopping is a chore.
I like to finish my shopping as quickly as possible and get out of the store.
I enjoy grocery shopping.

Innovativeness
When I see a product somewhat different from the usual, I check it out.
I am often among the first people to try a new product.
I like to try new and different things.

Variety Seeking
If I use the same brands over and over again, I get tired of them.
I buy different brands to get some variety.

Impulsiveness
I often find myself buying products on impulse in the grocery store.
I often make an unplanned purchase when the urge strikes me.

Mavenism
I am somewhat of an expert when it comes to shopping.
People think of me as a good source of shopping information.
I enjoy giving people tips on shopping.

Motivation to Conform
It bothers me if other people disapprove of my choices.
It is important to me to fit in.
My behavior often depends on how I feel others wish me to behave.

Brand Loyalty
I prefer one brand of most products I buy.
I am willing to make an effort to search for my favorite brand.
Usually, I care a lot about which particular brand I buy.

Store Loyalty
I prefer to always shop at one grocery store.
I am willing to make an effort to shop at my favorite grocery store.
Usually, I care a lot about which particular grocery store I shop at.

Planning
I spend a lot of time planning my grocery shopping trips.
I make a shopping list before I go grocery shopping.

Time Pressure
Most days, I have no time to relax.
I always seem to be in a hurry.
I never seem to have enough time for the things I want to do.

NFC
Thinking is not my idea of fun.
I like tasks that don't require much thinking once I have learned them.
I only think as hard as I have to.

Storage Space
I have plenty of storage space at home.
I have a lot of room at home to stock extra grocery products.

5. Demographic Variables

Age
1 = less than 25 years
2 = 25–34 years
3 = 35–44 years
4 = 45–59 years
5 = 60–74 years
6 = 75 years or older

Sex
0 = male
1 = female

Education
1 = high school or less
2 = some college
3 = college
4 = advanced degree

Employment (Dummy Variable Coded from Multicategory Question)
0/1 = homemaker
0/1 = full time/self-employed
0/1 = student
0/1 = retired
0/1 = part time/other

Children Under Age 12 (Dummy Variable Coded from Multicategory Question)
0 = no
1 = yes

Live in a House (Dummy Variable Coded from Multicategory Question)
0 = no
1 = yes

Annual Household Income
1 = <$30,000
2 = $30,000 to <$45,000
3 = $45,000 to <$60,000
4 = $60,000 to <$75,000
5 = $75,000 to <$100,00
6 = $100,00 to <$150,000
7 = >$150,000

Per Capita Income (Computed)
Annual household income/number of members in household

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Marketing Literature Review

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1. THE MARKETING ENVIRONMENT

1.1 Consumer Behavior

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American Demographics, 22 (January 2000), pp. 44–59. [Four articles on the auto consumer of the future, Age groups, Generation Y, Graying boomers, Gender differences, Changing household composition, Family life cycles, Hispanic market, Statistical data.] 1

Vacation Destination. John Fetto, *American Demographics*, 22 (February 2000), pp. 45–46. [Recreational property purchases, Second homes, Preferred areas, Age groups, Household income, Statistical data.] 2

A Sweet Deal. Jennifer Lach, *American Demographics*, 22 (January 2000), pp. 10–11. [Car dealers, Market strategy, Service, Market segments (highly involved deal seekers, low-involved pragmatists, relationship seekers), Advertising campaigns, Examples] 3

Kids Just Wanna Have Fun. Joan Raymond, *American Demographics*, 22 (February 2000), pp. 56–61. [Toy marketing, Media selection, Web sites, Premium cable channels, Video games, Examples.] 4

When Can Affective Conditioning and Mere Exposure Directly Influence Brand Choice? William E. Baker, *Journal of Advertising*, 28 (Winter 1999), pp. 31–46. [Literature review, Hypotheses, Two experiments, Factors, Brand familiarity, Quality differentiation, Motivation to deliberate, Cognitive control and demand effect analyses, Assessment.] 5

Ad Strategy and the Stone Age Brain. Mark S Cary, *Journal of Advertising Research*, 40 (January/April 2000), pp. 103–105. [Evolutionary psychology, What people want, Use of metaphors in advertising to create the link to the ancient, Examples.] 6

Accessibility or Diagnosticity? Disentangling the Influence of Culture on Persuasion Processes and Attitudes. Jennifer L. Aaker, *Journal of Consumer Research*, 26 (March 2000), pp. 340–57. [Literature review, Three experiments, High culture-distinct associations lead to more favorable attitudes for individuals in the target culture, High culture-distinct associations may be valued in the nontarget culture but are relatively inaccessible in memory at an individual level.] 7

The Influence of Positive Mood on Brand Extension Evaluations. Michael J Barone, Paul W. Miniard, and Jean B. Romeo, *Journal of Consumer Research*, 26 (March 2000), pp. 386–400. [Literature review, Hypotheses, Two experiments, Core brand, Extension type, Similarity, Competency of the marketer, Statistical analysis, Managerial implications.] 8

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The Moral Complexion of Consumption. Albert Borgmann, *Journal of Consumer Research*, 26 (March 2000), pp. 418–22. [Critiques of consumption, Paradigmatic consumption, Device paradigm, Principle of symmetry, Focal things and practices, Assessment.] 9

Why Is the Trivial Important? A Reasons-Based Account for the Effects of Trivial Attributes on Choice. Christina L. Brown and Gregory S. Carpenter, *Journal of Consumer Research*, 26 (March 2000), pp. 372–85. [Literature review, Model presentation, Two experiments, Positive and negative evaluation, Task goals, Brand preferences, Transitory reasoning, Statistical analysis.] 10

Motivated Reasoning: A Depth-of-Processing Perspective. Shailendra Pratap Jain and Durairaj Maheswaran, *Journal of Consumer Research*, 26 (March 2000), pp. 358–71. [Literature review, Heuristic–systematic model of persuasion, Hypotheses, Two experiments, Brand preferences, Strong and weak arguments, Preference-consistent and inconsistent information, Statistical analysis.] 11

Intimate Exchanges: Using Computers to Elicit Self-Disclosure from Consumers. Youngme Moon, *Journal of Consumer Research*, 26 (March 2000), pp. 323–39. [Literature review, Hypotheses, Two experiments, Factors, Reciprocity and sequence, How consumers behave in subsequent interactions, Statistical analysis, Implications.] 12

Regret: A Model of Its Antecedents and Consequences in Consumer Decision Making. Michael Tsiros and Vikas Mittal, *Journal of Consumer Research*, 26 (March 2000), pp. 401–17. [Literature review, Hypotheses, Four experiments, Satisfaction, Repurchase and complaint intentions, Better-forgone outcomes, Moderating effects (outcome valence, status quo preservation, reversibility of outcome), Cognitive process, Counterfactuals, Statistical analysis, Implications.] 13

Consumer Choice Between Hedonic and Utilitarian Goods. Ravi Dhar and Klaus Wertenbroch, *Journal of Marketing Research*, 37 (February 2000), pp. 60–71. [Literature review, Hypothesis, Three experiments and a field survey, Decision tasks, Impacts, Forfeiture and acquisition choices, Initial attribute-level reference states, Ownership, Market prices, Statistical analysis, Theoretical and managerial implications.] 14

Journal of Segmentation in Marketing, 3 (No 1, 1999), pp. 5–112. [Six articles on benefit segmentation, Trends, Projections, Commercial applications, Country of origin effects, European market for cash management services, Demographic segmentation, Dental services, Perceptions of value.] 15

Predicting Segment Membership of Financial Services Consumers. Tina Harrison, (Part 2) *Journal of Segmentation in Marketing*, 3 (No. 2, 1999), pp. 79–103. [Literature review; Survey of bank customers; Intersegment analysis of money transmission services, savings and investments, credit and loans; Comparisons; Financially confused; Apathetic minimalists; Cautious investors; Capital accumulators; Statistical analysis; Managerial implications; UK.] 16

The Personalizing Shopper and Marketplace Relationships: An Empirical Investigation. Alka Subramanian and Raymond A. Marquardt, *Journal of Segmentation in Marketing*, 3 (No. 2, 1999), pp. 5–21. [Literature review, Customer retention strategies, Scales, Hypotheses, Consumer survey, Attitudes, Local retail patronage, Outshopping, Demographic characteristics, Statistical analysis, Implications.] 17

A Conceptual Approach to Classifying Sports Fans. Kenneth A. Hunt, Terry Bristol, and R. Edward Bashaw, *Journal of Services Marketing*, 13 (No. 6, 1999), pp. 439–52. [Literature review, Typology (temporary, local, devoted, fanatical, dysfunctional), Segmentation strategies, Assessment, Managerial implications.] 18

The Future of Customers. Gordon A. Wyner, *Marketing Management*, 8 (Fall 1999), pp. 8–10. [Trends, Market segments, Reemergence of traditional preferences, Customer value, Customer relationships, New information, Examples.] 19

Understanding Customer Delight and Outrage. Benjamin Schneider and David E. Bowen, *Sloan Management Review*, 41 (Fall 1999), pp. 35–45. [Service encounters, Met-expectations model, Needs-based model, Security, Justice, Self-esteem, Human resources management, Technology and personalization, Market research, Building relationships, Examples.] 20

1.2 Legal, Political and Economic Issues

See also 28, 103, 150, 182

Airline Marketing Alliances and U.S. Competition Policy: Does the Consumer Benefit? Thomas A. Hemphill, *Business Horizons*, 43 (March/April 2000), pp. 17–24. [Regulatory agencies, Major aspects (code-sharing, reciprocal frequent flier programs), Examples.] 21

Truth and the Evolution of the Professions: A Comparative Study of "Trust in Advertising" and "True and Fair" Financial Statements in North America During the Progressive Era. D.G. Brian Jones, Alan J. Richardson, and Teri Shearer, *Journal of Macromarketing*, 20 (June 2000), pp. 23–35. [Theoretical discussion, Auditors compared with advertisers (1880–1940), Legislation, Auditors made the greatest progress toward professionalization.] 22

Clothed in the Public Interest: The Common Callings, Commerce, and Marketing. Steven W. Kopp and Mike Landry, *Journal of Macromarketing*, 20 (June 2000), pp. 36–45. [Historical discussion, Legislation, Regulation, Court decisions, There has been no clear definition of common calling.] 23

Medical Advertising. David E. Richman, *Marketing Management*, 8 (Fall 1999), pp. 14–17. [Court decisions, Liability, Claims, Consumer protection laws, Applied to "entrepreneurial" or commercial aspects of the medical profession, Assessment.] 24

Corrective Advertising. Barry R. Shapiro, *Marketing Management*, 9 (Spring 2000), pp. 58–61. [Discussion, Claims, Misleading consumers, First Amendment concerns, FTC, Rulings, Examples.] 25

States May Face New "Article 2" Debates as Early as 2001. John Murray Jr., *Purchasing*, 128 (January 13, 2000), pp. 36, 39. [Uniform Commercial Code, Revisions, Impacts, Electronic contracting and commerce, Software packages, State and international transactions, Assessment.] 26

1.3 Ethics and Social Responsibility

See also 154

The Corporate Social Responsiveness Orientation of Hospital Directors: Does Occupational Background Make a Difference? Nabil A. Ibrahim, John P. Angelidis, and Donald P. Howard, *Health Care Management Review*, 25 (Spring 2000), pp. 85–92. [Literature review, Survey, Comparisons, Variables (economic, legal, ethical, discretionary), Statistical analysis.] 27

The Greening of Corporate America. Harvey Meyer, *Journal of Business Strategy*, 21 (January/February 2000), pp. 38–43. [Discussion, Regulation, Environmental awareness and management, International Organization of Standards, Product design, Cost savings, Customer satisfaction, Employee recruitment, Examples.] 28

An Exploratory Study of Influences on Public Opinion Towards Alcohol and Tobacco Sponsorship of Sporting Events. Stephen R. McDaniel and Daniel S. Mason, *Journal of Services Marketing*, 13 (No. 6, 1999), pp. 481–99. [Discussion, Hypotheses, Consumer survey, Attitudes, Sports, Media, Lifestyle, Acceptance levels, Demographic characteristics, Self-interest and public opinion, Statistical analysis, Managerial implications.] 29

2. MARKETING FUNCTIONS

2.1 Management, Planning, and Strategy

See also 19, 20, 28, 60, 61, 65, 66, 68, 69, 71, 75, 76, 77, 80, 81, 85, 89, 90, 92, 93, 94, 97, 99, 101, 102, 104, 105, 107, 111, 112, 113, 114, 115, 118, 134, 137, 143, 144, 145, 146, 155, 158, 159, 160, 161, 164, 165, 167, 168, 169, 170, 171, 173, 176, 177, 178, 183, 184, 189, 190, 195, 197, 207, 208, 209, 216, 217, 219, 220, 230, 231

Of Competitive Advantage: Kinetic and Postional. Hao Ma, *Business Horizons*, 43 (January/February 2000), pp. 53–64. [Discussion, Kinetic (entrepreneurial, organizational, technical, managerial), Positional (supplier, collaborator, consumer, complementor, distributor, substitutor, government, competitor), Assessment.] 30

Top Trends: Alliances, Net Growth Key in 2000. Philip Clark, *Business Marketing*, 85 (January/February 2000), pp. 1, 34. [Increased Web activity, Web as a source of information, Partnerships with clients, Globalization, Information sharing, Customer relationship management, Simplicity, Use of dot-com, Marketing on buying hubs.] 31

A Market-Driven Approach to Retaining Talent. Peter Cappelli, *Harvard Business Review*, 78 (January/February 2000), pp. 103–11. [Discussion, Impacts, Job design, Job customization, Social ties, Location, Hiring, Adapting to attrition, Guidelines.] 32

Leadership That Gets Results. Daniel Goleman, *Harvard Business Review*, 78 (March/April 2000), pp. 78–90. [Emotional intelligence competencies, Management styles, Coercive, Authoritative, Affiliative, Democratic, Pacesetting, Coaching, Flexibility among styles, Assessment.] 33

Narcissistic Leaders: The Incredible Pros, The Inevitable Cons. Michael Maccoby, *Harvard Business Review*, 78 (January/February 2000), pp. 68–77. [Discussion, Strengths (great vision, scores of followers), Weaknesses (faults increase as success increases, sensitive to criticism, poor listeners, lack of empathy, distaste for mentoring, intense desire to compete), Success, Guidelines.] 34

Discovering New Value in Intellectual Property. Kevin G. Rivette and David Kline, *Harvard Business Review*, 78 (January/February 2000), pp. 54–66. [Establish proprietary market advantage (protect core technologies and business methods, R&D and branding effectiveness, anticipate market and technology shifts), Improve financial performance (licensing of patent rights, reduce costs, attract new capital), Enhance competitiveness, Examples.] 35

Leadership and Relationship Commitment: A Focus on the Supplier–Buyer–User Linkage. G. Tomas M. Hult, O.C. Ferrell, Robert F. Hurley, and Larry C. Giunipero, *Industrial Marketing Management*, 29 (March 2000), pp. 111–19. [Literature review, Transformational and transactional leadership behaviors, Two samples, Transformational leadership has a positive influence on building commitment between users and buyers and buyers and suppliers, Managerial implications.] 36

Including Marketing Synergy in Acquisition Analysis: A Step-Wise Approach. John A. Weber and Utpal M. Dholakia, *Industrial Marketing Management*, 29 (March 2000), pp. 157–77. [Literature review, Phases, Identifying and prioritizing areas for potential marketing consolidations and synergy, Micromarketing analysis of core business areas by using path analysis, Example.] 37

Ivy Business Journal (Canada), 64 (January/February 2000), pp. 20–56, 62–67. [Five articles on human resources, Return to shareholders, Transformational workers, Intellectual capital, Bridging cultures, Adding value in a merger, Strategic planning, Examples.] 38

Click. Boom: The Next Generation of E-Commerce Strategy. Philip Evans and Thomas E. Wurster, *Ivy Business Journal (Canada)*, 64 (March/April 2000), pp. 35–41. [Managing deconstruction, Range of patterns, Relevance, Recognizing threats, Rewards, New business definitions, Insights, Organizational behavior, Self-preservation, Learning from mistakes, Clarity of vision and consistency of purpose.] 39

The Indefatigable Entrepreneur: A Study of the Dispositions of Multiple Venture Founders. JoAnn C. Carland, James W. Carland, and Wayne H. Stewart Jr., *Journal of Business and Entrepreneurship*, 12 (March 2000), pp. 1–18. [Literature review, Survey, Demographic and psychological differences between entrepreneurs who owned and operated one or two ventures versus those associated with three ventures or more, Statistical analysis.] 40

A Case Study of Two Forecasting Organizational Options. Cynthia Koster, *Journal of Business Forecasting*, 19 (Spring 2000), pp. 14–15. [Discussion, Comparisons, Independent forecasting and brand management structures, Objectives (accuracy measurement and tracking, management of consensus process, effective communications, optimal resource use), Impact of organizational changes, Reevaluation.] 41

A Thousand-Year Strategic Plan. Richard W. Oliver, *Journal of Business Strategy*, 21 (January/February 2000), pp. 7–9. [Discussion; Time concerns; Plan frequency, cycle, period, retrospective, horizon, Assessment.] 42

An Empirical Analysis and Extension of the Bartlett and Ghoshal Typology of Multinational Companies. Anne-Wil Harzing, *Journal of International Business Studies*, 31 (First Quarter 2000), pp. 101–20. [Literature review, Threefold typology (global, multidomestic, transnational), Survey, Impacts, Organizational design and subsidiary role, Local responsiveness, Interdependence, Statistical analysis.] 43

Corridors of Influence in the Dissemination of Customer-Oriented Strategy to Customer Contact Service Employees. Michael D. Hartline, James G. Maxham III, and Daryl O. McKee, *Journal of Marketing*, 64 (April 2000), pp. 35–50. [Literature review, Model proposal, Hypotheses, Survey of hotel managers and employees, Measures, Customer-oriented strategy, Formalization, Empowerment, Behavior-based evaluation, Work group socialization, Organizational commitment, Shared customer-oriented values, Interactions, Statistical analysis, Managerial implications.] 44

Is All Communication Created Equal? An Investigation into the Effects of Communication Mode on Perceived Information Quality. Elliot Maltz, *Journal of Product Innovation Management*, 17 (March 2000), pp 110–27. [Literature review, Model presentation, Survey of nonmarketing managers, Impacts, Written and electronic information, Telephone, Face-to-face, Statistical analysis, Managerial implications.] 45

Critical Technology Management Issues of New Product Development in High-Tech Companies. George M. Scott, *Journal of Product Innovation Management*, 17 (January 2000), pp. 57–77. [DELPHI Questionnaire Management Issues Methodology, Academic and industry participants, Rankings, Technology strategic planning, New product project selection, Organizational learning, Technology core competencies, Cycle time reduction, Conducive culture, Teams, Technology trends and paradigm shifts, Marketing groups, Customer/supplier involvement, Implications.] 46

Long Range Planning (UK), 33 (February 2000), pp 5–71. [Three articles on knowledge management, Unified model of dynamic knowledge creation, Strategies for managing knowledge assets, Role of firm structure and industrial context, Global technology markets.] 47

Taking Stock of Synergy: A Framework for Assessing Linkages Between Businesses. Michael Goold and Andrew Campbell, *Long Range Planning (UK)*, 33 (February 2000), pp. 72–96. [Literature review, Synergy opportunities, Approach, Effectiveness, Change, Value chain overlaps, Example.] 48

Recovery Strategies for Sports Marketers. Rick Burton and Dennis Howard, *Marketing Management*, 9 (Spring 2000), pp. 42–49. [Unexpected events, Dissatisfied clients, Thinking logically and functionally, Action plan, Incentives, Service guarantees, Examples.] 49

Setting the Pace with Solutions. Daniel Doster and Eric Roegner, *Marketing Management*, 9 (Spring 2000), pp. 51–54. [Customer problem solving; Decide on organizational structure; Assemble skills through partners, alliances, and acquisitions; Set prices with a solutions premium; Gear sales team and approach to solutions environment; Continue monitoring.] 50

Measuring Your Return on Innovation. Thomas D. Kuczmarski, *Marketing Management*, 9 (Spring 2000), pp. 25–32. [Discussion, Innovation investment metrics, Purpose (vision, strategic roles, growth gap), Process (formalized new product development), Screening criteria, People (create effective teams and recruit executive champions, innovation rewards), Guidelines.] 51

Value Measures in the Executive Suite. Timothy Matanovich, *Marketing Management*, 9 (Spring 2000), pp. 35–40. [Linking strategy to profitability, Gaining and retaining customers, Growing customer margins, Return-on-marketing investment, Employee and customer satisfaction, E-business, Assessment.] 52

Your Survival Guide for the New Economy. Michele Marchetti, *Sales and Marketing Management*, (March 2000), pp. 44–48, 50, 52. [Discussion, Change, Uncertainty, Business-to-business Internet opportunities, Cross-functional teams, Experience, Creative, Profitable revenues, Examples.] 53

Creating a Market-Driven Organization. George S. Day, *Sloan Management Review*, 41 (Fall 1999), pp. 11–22. [Discussion; Conditions; Demonstrating leadership; Understanding need for change, Shaping Employee vision; Mobilizing commitment at all levels; Aligning structures, systems, and incentives; Reinforcing the change, Examples.] 54

2.2 Retailing

See also 17, 74, 88, 91, 95, 109, 116, 119, 131, 134, 180, 191, 218

Patterns of Disruption in Retailing. Clayton M. Christensen and Richard S. Tedlow, *Harvard Business Review*, 78 (January/February 2000), pp. 42–45. [Historical discussion, Department stores, Malls and discounters, Specialty discounters, Internet, Upmarket momentum, Assessment.] 55

Customer Response to Retail Environments. Shaun McQuitty, Kevin Shanahan, and Eric Pratt, *Journal of Business and Entrepreneurship*, 12 (March 2000), pp. 49–66. [Literature review, Servicescapes model, Survey, Crowding has advantages in some situations and can facilitate positive customer–customer and customer–employee interactions.] 56

Slotting Allowances and Fees: Schools of Thought and the Views of Practicing Managers. Paul N. Bloom, Gregory T. Gundlach, and Joseph P. Cannon, *Journal of Marketing*, 64 (April 2000), pp. 92–108. [Literature review, Schools of thought (efficiency, market power), Grocery industry survey, Effects, Shift the risk of new product introductions, Help apportion demand and supply, Exercise of retail market power, Applied in a discriminatory fashion, Lead to higher retail prices, Statistical analysis, Implications.] 57

Customer Loyalty to the Salesperson and the Store: Examining Relationship Customers in an Upscale Retail Context. Kristy E. Reynolds and Mark J. Arnold, *Journal of Personal Selling and Sales Management*, 20 (Spring 2000), pp. 89–98. [Literature review, Model presentation, Hypotheses, Survey of customers, Factors, Word of mouth, Share of purchases, Competitive resistance, Statistical analysis, Implications.] 58

Multi-Unit Retail Site Selection Processes: Incorporating Opening Delays and Unidentified Competition. Patrick J. Kaufmann, Naveen Donthu, and Charles M. Brooks, *Journal of Retailing*, 76 (Spring 2000), pp. 113–27. [Literature review, Model presentation, Discount revenue stream, Comparisons, Standard sequential and global approach procedures, Two party-game-like simulation, Statistical analysis.] 59

Knowledge Structures and Retail Sales Performance: An Empirical Examination. Arun Sharma, Michael Levy, and Ajith Kumar, *Journal of Retailing*, 76 (Spring 2000), pp. 53–69. [Literature review, Survey of salespeople, Declarative and procedural knowledge, Impacts, Revenues, Statistical analysis.] 60

Toward the Development of Measures of Distinctive Competencies Among Small Independent Retailers. Jeffrey E. McGee and Mark Peterson, *Journal of Small Business Management*, 38 (April 2000), pp. 19–33. [Literature review, Survey, Attitudes, Performance, Service image, Control of retailing programs, Action ability, Confirmatory factor analysis, Drug store industry.] 61

Profiling Process Weighs Impact of Store Design on Performance. Timothy P. Henderson, *Stores*, 82, Section 1 (January 2000), pp. 88, 90. [Discussion, Methods, Mathematical models, Data collection, Store image, Floor plans, Evaluation points, Format, Comparisons, Fixture density, Moving departments, Examples.] 62

2.3 Channels of Distribution

See also 17, 26, 31, 36, 57, 82, 84, 86, 88, 89, 90, 92, 93, 109, 131, 139, 142, 153, 166, 229

There's No Place Like Home. Rebecca Gardyn, *American Demographics*, 22 (March 2000), pp. 40–42, 44–45. [Target markets, Hometown newspapers, Supplements, Small communities, Local news, Advertising rates, Statistical data.] 63

You've Got Snail Mail! Jennifer Lach, *American Demographics*, 22 (March 2000), pp. 54, 56. [Online merchants try traditional catalogs, Benefits, Target markets, Income groups, Database mining, Examples.] 64

Managing Marketing Channel Opportunism: The Efficacy of Alternative Governance Mechanisms. James R. Brown, Chekitan S. Dev, and Dong-Jin Lee, *Journal of Marketing*, 64 (April 2000), pp. 51–65. [Literature review, Hypotheses, Survey of hotel general managers, Effects, Ownership, Investment in transaction-specific assets, Norms of relational exchange, Statistical analysis, Managerial implications.] 65

Buyer–Supplier Contracts Versus Joint Ventures: Determinants and Consequences of Transaction Structure. Mark B. Houston and Shane A. Johnson, *Journal of Marketing Research*, 37 (February 2000), pp. 1–15. [Literature review; Hypotheses; Data collection; Joint ventures are more likely to form when the supplier's degree of asset specificity is high, monitoring the supplier's behavior is difficult, and the supplier has a poorer reputation; Statistical analysis.] 66

Role of the Sales Manager in Channel Management: Impact of Organizational Variables. Rajiv Mehta, Bert Rosenbloom, and Ralph Anderson, *Journal of Personal Selling and Sales Management*, 20 (Spring 2000), pp. 81–88. [Literature review, Survey, Practices (formulating channel strategy, designing distribution channels, selecting and motivating channel members, coordinating strategy, evaluating performance, managing conflict), Consumer versus industrial goods and small versus large firms, Managerial implications.] 67

Economic and Social Satisfaction: Measurement and Relevance to Marketing Channel Relationships. Inge Geyskens and Jan-Benedict E.M. Steenkamp, *Journal of Retailing*, 76 (Spring 2000), pp. 11–32. [Literature review; Hypotheses; Survey; Interactions with exchange partners; Exit, voice, loyalty, and neglect typology of responses to relationship problems; Use of noncoercive and coercive power; Statistical analysis; Implications.] 68

Can Relationships Be Segmented? The Chinese Guanxi Approach. Y.H. Wong, *Journal of Segmentation in Marketing*, 3 (No. 2, 1999), pp. 23–41. [Literature review, Interactive behavior segments (battle, bargain, belonging, beloved), Case study, Packaging industry, China.] 69

Buyers Look to Distributors for Supply Chain Services. James Carbone, *Purchasing*, 128 (February 10, 2000), pp. 50–51, 55, 57. [Build-to-order business model, Customer relations, Electronics, Contract manufacturers, Internets and extranets, Electronic data interchange, Program costs, Examples.] 70

Manage Consolidation in the Distribution Channel. Adam J. Fein and Sandy D. Jap, *Sloan Management Review*, 41 (Fall 1999), pp. 61–72. [Business-to-business, Wholesale distributors, Integrated supply agreements, Strategic responses (partner with the winners, invest in fragmentation, build alternative route to market, create new channel equity), Examples.] 71

2.4 Electronic Marketing

See also 4, 26, 31, 39, 53, 55, 64, 65, 70, 142, 145, 179, 180, 217, 230

Casting the Health.Net. Alison Stein Wellner, *American Demographics*, 22 (March 2000), pp. 46–49. [Target markets, Health-conscious consumers, Web pharmacies, Prescription medications, Providing information, Over-the-counter products, Age groups, Statistical data.] 72

Cost Transparency: The Net's Real Threat to Prices and Brands. Indrajit Sinha, *Harvard Business Review*, 78 (March/April 2000), pp. 43–48, 50. [Internet provides information on costs, Impairs a seller's ability to obtain high margins, Turns products and services into commodities, Weakens brand loyalty, Creates perceptions of price unfairness, Erodes the "risk premium," Makes search more efficient, Can see the "price floor," Encourages rational shopping, Managerial implications.] 73

The E-Tail Revolution: Challenges and Limitations. David W. Conklin and Mark Trudeau, *Ivy Business Journal (Canada)*, 64 (March/April 2000), pp. 44–50. [Discussion, Problems, Speed of adoption, Government policies, Internet access, Lack of local-loop bandwidth, Market segmentation, Investment in Internet activities, Reliance on U.S. firms, Assessment, Canada.] 74

From Bricks to Clicks: The Risks and Rewards. Derrick Neufeld and Michael Parent, *Ivy Business Journal (Canada)*, 64 (March/April 2000), pp. 72–77. [Web risk–rewards, Low risk–low returns (tokenism and brochureware strategies), High risk–low returns (avoid), High potential returns (e-business models, scope, profitability).] 75

Managing the Supply Chain: The Internet as Energizer. John Raskob, *Ivy Business Journal (Canada)*, 64 (March/April 2000), pp. 52–61. [Discussion; Web-enabled systems; Electronic data interchange; E-procurement; Auctions, exchanges, and other infomediaries; Collaborative product design and E-manufacturing; Collaborative planning, forecasting, and replenishment; Examples.] 76

An E-Business Blueprint: Internet Commerce Management. Paul F. Scarpa, *Ivy Business Journal (Canada)*, 64 (March/April 2000), pp. 62–67. [Model presentation, Identifying and managing customer needs, Generating product demand, Delivering product value, Building and maintaining the Internet storefront, Strategies for developing capabilities, Managerial implications.] 77

Journal of Advertising Research, 40 (January/April 2000), pp. 29–64. [Four articles on Web commercials, Web page background and viewer attitudes, Advertising hierarchy of effects, Drawing prospects to e-commerce Web sites, New film Web site promotion and box-office performance.] 78

Why Everyone Hates Marketing. David Weinberger, *Journal of Brand Management (UK)*, 7 (March 2000), pp. 291–95. [Networked markets, Branding companies, Conversation, Global, Examples.] 79

The Seventh Annual Software Roundup: E-Commerce. Sunny Baker and Kim Baker, *Journal of Business Strategy*, 21 (January/February 2000), pp. 12–17. [World Wide Web, Software packages, Cost effective scalability, Home pages, Virtual shopping carts, Credit card capability, Payment transaction systems, Security, Web content, Integration, Examples.] 80

Untangling the Value Web. Shawn D. Cartwright and Richard W. Oliver, *Journal of Business Strategy*, 21 (January/February 2000), pp. 22–27. [Value chain analysis, Market shares, Electronic marketspace, Network relationships, Value cluster analysis, Application.] 81

Linking Web Sales to Call Centers. Mary Margaret Gibson, *Journal of Business Strategy*, 21 (January/February 2000), pp. 28–33. [E-business model, Data services and products, Customer-focused, Sales training, Channel Opportunity Analysis, Online ordering with the safety net of a proven phone representative, Case study.] 82

How to Build Trust Online. Sandeep Dayal, Helene Landesberg, and Michael Zeisser, *Marketing Management*, 8 (Fall 1999), pp. 64–69. [Customer relations, Order fulfillment, Control access to personal information, Customers contact and inform each other about the company's product and service offering, Value exchange (attraction, user- and marketer-driven personalization, collaboration), Assessment.] 83

Move Over, E-Commerce: Emerging Digital Marketplaces Promise the Next Wave of Business Competition. Ravi Kalakota, Ralph A. Oliva, and Bob Donath, *Marketing Management*, 8 (Fall 1999), pp. 23–32. [Discussion, Networking strategy trends, Extranets, Enterprise portals, Third-party marketplaces, Examples, Managerial implications.] 84

Purchasing, 128 (March 23, 2000), p. S7–S146. [Fourteen articles on e-procurement strategies, Survey of executives, Competitive advantage, Online auctions, Strategic supply management, Buyer–seller relations, Cost savings, Web-based trade exchange, Saving buyers' time, Buy-side systems, Transportation strategies, Source of information, Listing of Web sites, Case studies.] 85

Internet Creates New Supply Chains for MRO Buyers. Susan Avery, *Purchasing*, 128 (February 10, 2000), pp 136–37. [Online marketplaces (auction, exchange, metacatalogue, mall, collaboration, agent, clearinghouse), Projected growth, Benefits (breadth, reduced search costs, time), Distributors will reinvent their businesses, Examples.] 86

As Good As It Gets. Chad Kaydo, *Sales and Marketing Management*, 152 (March 2000), pp. 55–58, 60. [Ways to use e-mail, Customer relationships, Corporate newsletters, Reminder services, Order confirmation, Customer service, Permission list marketing, Viral marketing, Comarketing with partners, Event follow-up, Communicating with channel partners.] 87

B2B Comes to Retail. Susan Reda, *Stores*, 82 (March 2000), pp. 28–30, 32. [Business-to-business e-marketplaces, Impacts, Supply chain, Partnerships, Efficient buying, Channel control, Buyer and seller interest, Examples.] 88

2.5 Physical Distribution

See also 76, 81, 112, 115, 200, 201

The Manager's Guide to Supply Chain Management. F. Ian Stuart and David M. McCutcheon, *Business Horizons*, 43 (March/April 2000), pp. 35–44. [Discussion, Fundamental objectives, Relationship form, Critical enablers, Benefits and outcomes, Decision model, Assessment.] **89**

Industrial Marketing Management, 29 (January 2000), pp. 1–96. [Nine articles on supply chain management, Developing strategies, Emerging opportunities, Customer demand planning, Supply chain design, Conjoint analysis, Flexibility and responsiveness, Role of the Internet, Supplier and buyer effect on inventory performance, Cross-functional integration.] **90**

Stock Replenishment and Shipment Scheduling for Vendor-Managed Inventory Systems. Sila Cetinkaya and Chung-Yee Lee, *Management Science*, 46 (February 2000), pp. 217–32. [Literature review, Analytic model, Retailers, Demands, Optimum economical consolidated dispatch quantity, Renewal theory, Assessment.] **91**

Transportation Can Provide a Competitive Edge—or Take It Away. Brian Milligan, *Purchasing*, 128 (January 13, 2000), pp. 137–38, 140, 144. [Impact on economy, Problems, On-time delivery, Just-in-time, Losing track of late shipments, Third-party logistics, Internet, Examples.] **92**

Competitive Supply Strategies for the 21st Century. Robert M. Monczka and James P. Morgan, *Purchasing*, 128 (January 13, 2000), pp. 48–50, 52–55, 59. [Trends, Industrial business growth, Customer orientation, Economic value-added model, E-commerce, Sourcing/supply chain management, Integration and implementation, Global, Strategic cost management, Projections.] **93**

2.6 Pricing

See also 50, 73, 96, 118, 167, 192, 193, 199, 203

How to Fight a Price War. Akshay R. Rao, Mark E. Bergen, and Scott Davis, *Harvard Business Review*, 78 (March/April 2000), pp. 107–16. [Discussion, Factors, Diagnosis, Reveal strategic intentions, Nonprice actions, Selective pricing actions, Fight it out, Retreat, Early prevention, Examples.] **94**

Unit Prices on Retail Shelf Labels: An Assessment of Information Prominence. Anthony D. Miyazaki, David E. Sprott, and Kenneth C. Manning, *Journal of Retailing*, 76 (Spring 2000), pp. 93–112. [Discussion, Hypotheses, Field study and experiment, Price consciousness, Awareness, Shifting purchases toward lower unit priced items, Statistical analysis, Implications.] **95**

2.7 Product

See also 1, 3, 5, 8, 10, 11, 14, 19, 45, 46, 51, 73, 79, 122, 128, 144, 145, 146, 164, 167, 171, 173, 180, 188, 192, 198, 221

Drink Me. Matthew Grimm, *American Demographics*, 22 (February 2000), pp. 62–63. [Discussion, Soft drinks, Pricing strategy, Advertising campaigns, Brand loyalty, Family life cycles, Case study.] **96**

The Brand Report Card. Kevin Lane Keller, *Harvard Business Review*, 78 (January/February 2000), pp. 147–50, 152, 154, 156–57. [Discussion, Attributes, Brand delivers benefits to customers, Stays relevant, Value pricing, Proper positioning, Consistency, Brand portfolio and hierarchy, Coordinates marketing activities to build equity, Brand image, Sustained management support, Monitoring sources of brand equity, Examples.] **97**

Determinants of the Adoption of New Product Development Tools by Industrial Firms. Edwin J. Nijssen and Ruud T. Frambach, *Industrial Marketing Management*, 29 (March 2000), pp. 121–31. [Literature review, Hypotheses, Survey, Impacts, Innovation strategy, Number of interactions between departments, Number of departments involved, Prior adoption of tools, Number of NPD stages on tool adoption, Managerial implications, The Netherlands.] **98**

Marketing Information Exchange Mechanisms in Collaborative New Product Development: The Influence of Resource Balance and Competitiveness. Helen Perks, *Industrial Marketing Management*, 29 (March 2000), pp. 179–89. [Literature review, Conceptual framework, Functional integration, Integrative mechanisms, Contextual factors, Case studies, Europe, Japan.] **99**

Republican Brands, Democrat Brands.... Betsy D. Gelb and Alina B. Sorescu, *Journal of Advertising Research*, 40 (January/April 2000), pp. 95–102. [Empirical exploration, Perceptions of brand characteristics related to political preference, Effects, Gender, Assessment.] **100**

The ACID Test—A Communications Tool for Leadership Teams Who Want to Interact with the Whole Organization. Dave Allen, *Journal of Brand Management (UK)*, 7 (March 2000), pp. 257–66. [World class brands, Identity (actual, desired, ideal), Brand alignment (action, direction, expression, promise), Examples.] **101**

Brand Magnetics. Peter Fisk, *Journal of Brand Management (UK)*, 7 (March 2000), pp. 267–74. [Core values, Change, Connecting brand stakeholders, Energy and distinction, Behavioral aspects, Examples.] **102**

Assessing the Risk of Consumer Confusion: Some Practical Test Results. Wendy Lomax, Emma Sherski, and Sarah Todd, *Journal of Brand Management (UK)*, 7 (November 1999), pp. 119–32. [Literature review, Models, Look-alike products, Legal aspects, Experiment, Recall and recognition, Overall visual similarity, Implications, UK.] **103**

Letting the Brand Guide the People. Melissa Richardson, *Journal of Brand Management (UK)*, 7 (March 2000), pp. 275–80. [Discussion, Historical brand audit, Brand vision and behavior workshops, Action plans, Communication, Assessment.] **104**

Do World Product Mandates Really Matter? Susan E. Feinberg, *Journal of International Business Studies*, 31 (First Quarter 2000), pp. 155–67. [Literature review, Data collection (Bureau of Economic Analysis), Canada–U.S. trade liberalization, Comparisons, Nonspecialized subsidiaries, Levels of R&D and human capital resources, Statistical analysis.] **105**

Treating the Nation as a Brand: Some Neglected Issues. John O'Shaughnessy and Nicholas Jackson O'Shaughnessy, *Journal of Macromarketing*, 20 (June 2000), pp. 56–64. [Discussion, Idea of image, Stereotypes, Multiple meanings, Incoherence, Reputational capital, Associationism, Choice processes, Country of origin, Government manipulation, Examples.] **106**

New Product Quality and Product Development Teams. Rajesh Sethi, *Journal of Marketing*, 64 (April 2000), pp. 1–14. [Discussion, Hypotheses, Survey of firms, Measures, Information integration, Customers' influence, Time pressure, Innovativeness, Quality orientation, Functional diversity, Statistical analysis.] **107**

Inferring Latent Brand Dependencies. Ulf Bockenholt and William R. Dillon, *Journal of Marketing Research*, 37 (February 2000), pp. 72–87. [Literature review, Brand-transition probabilities, Individual heterogeneity in brand switching, Two model forms, Latent class structure, Dirichlet distribution, Monte Carlo simulations, Empirical application.] **108**

The Emergence of Market Structure in New Repeat-Purchase Categories: The Interplay of Market Share and Retailer Distribution. Bart J. Bronnenberg, Vijay Mahajan, and Wilfried R. Vanhonacker, *Journal of Marketing Research*, 37 (February 2000), pp. 16–31. [Literature review, Model development, Hypotheses, Data collection, Variables, Share of sales, Distribution, Relative price, Store feature, Advertising expenditure, Statistical analysis, Implications.] **109**

An Analysis of Product Deletion Scenarios. George J. Avlonitis, Susan J. Hart, and Nikolaos X. Tzokas, *Journal of Product Innovation Management*, 17 (January 2000), pp. 41–56. [Literature review, Survey of manufacturing companies, Underlying factors/dimensions, Situational and product-related, Typology, Statistical analysis, Theoretical implications, UK.] **110**

The Predictive Power of Internet-Based Product Concept Testing Using Visual Depiction and Animation. Ely Dahan and V. Srinivasan, *Journal of Product Innovation Management*, 17 (March 2000), pp. 99–109. [Virtual prototypes as substitutes for physical prototypes, Attribute-only full-profile conjoint analysis, Market shares, Costs, Assessment.] **111**

The Ability to Minimize the Timing of New Product Development and Introduction: An Examination of Antecedent Factors in the North American Automobile Supplier Industry. Cornelia Droge, Jayanth Jayaram, and Shawnee K. Vickery, *Journal of Product Innovation Management*, 17 (January 2000), pp. 24–40. [Literature review, Model presentation, Survey of firms, Impacts, Human resource management, Synergistic integration, Supplier closeness, Manufacturing interface, Statistical analysis, Implications.] **112**

Applying Performance Support Technology in the Fuzzy Front End. Mitzi M. Montoya-Weiss and Tony D. O'Driscoll, *Journal of Product Innovation Management*, 17 (March 2000), pp. 143–61. [Literature review, Idea development and idea selection stages of new product development, Effects, Nortel's idea-to-opportunity front-end process, Implementation, Assessment.] **113**

Extraordinary Guarantees. Christopher W. Hart, *Marketing Management*, 9 (Spring 2000), pp. 4–5. [Discussion, Components, Barriers, Urgency to be better, Beating competitors, Valuable exercise, Assessment.] **114**

Design: What Purchasing Brings to the Table. Brian Milligan, *Purchasing*, 128 (March 9, 2000), pp. 54–56, 58–60. [New product design, Early involvement, Functional groups, Project teams, Procurement, Supplier relations, Information sharing, Examples.] **115**

2.8 Sales Promotion

See also 192

Holding All the Cards. Nancy Shepherdson, *American Demographics*, 22 (February 2000), pp. 35–37. [Grocers, Competitive advantage, Frequent-shopper programs, Cards, Data mining, Customer loyalty, Purchase behavior, Statistical data.] **116**

The Optimal Choice of Promotional Vehicles: Front-Loaded or Rear-Loaded Incentives? Z. John Zhang, Aradhna Krishna, and Sanjay K. Dhar, *Management Science*, 46 (March 2000), pp. 348–62. [Literature review, Model presentation and extension, Experiment and market-level data collection, Impacts, Markets with high variety seeking, Markets with high inertia, Statistical analysis, Managerial implications.] **117**

Trade Promotion: Essential to Selling Through Resellers. Kusum Ailawadi, Paul Farris, and Ervin Shames, *Sloan Management Review*, 41 (Fall 1999), pp. 83–92. [Discussion, Incentives, Pricing, Discounts, Profit maximization, Effectiveness, Channel coordination, Competition, Assessment.] **118**

Retailers Explore New Ways of Rewarding Their Best Customers. Janet Groeber, *Stores*, 82 Section 1 (January 2000), pp. 44, 46, 48–49. [Customer loyalty programs, Customer expenditures, Cards, Points, Impacts, Databases, Age groups, Examples.] **119**

2.9 Advertising

See also 3, 6, 22, 24, 25, 49, 63, 72, 78, 96, 100, 162, 163, 182, 187, 213

American Demographics, 22 (March 2000), pp. s3–s22. [Six articles on the 2000 David Ogilvy research awards, Finalists, Advertisers, Ad agencies, Research companies, Tactics, Payoffs, Assessment.] **120**

The Opening and Reading Behavior of Business-to-Business Direct Mail. Kristof De Wulf, Janny C Hoekstra, and Harry R. Commandeur, *Industrial Marketing Management*, 29 (March 2000), pp. 133–45. [Literature review, Hypotheses, Field experiment, Logistic regression modeling, Impacts, Manipulating envelope characteristics, Segmenting and targeting, Managerial implications, Belgium.] **121**

Building Brand Image Through Event Sponsorship: The Role of Image Transfer. Kevin P. Gwinner and John Eaton, *Journal of Advertising*, 28 (Winter 1999), pp. 47–57. [Literature review; Hypotheses; Experiment; Image transfer from event to brand; Image, functional, and no similarity; Adjective and holistic measures; Statistical analysis; Managerial implications.] **122**

The Message Is in the Metaphor: Assessing the Comprehension of Metaphors in Advertisements. Susan E. Morgan and Tom Reichert, *Journal of Advertising*, 28 (Winter 1999), pp. 1–12. [Literature review, Hypotheses, Study, Integrative processing, Interpretation of concrete and abstract metaphors, Visual and verbal metaphors, Hemisphericity, Statistical analysis, Implications.] **123**

The Sleeper Effect and Negative Political Advertising. Ruth Ann Weaver Lariscy and Spencer F Tinkham, *Journal of Advertising*, 28 (Winter 1999), pp 13–30. [Literature review; Hypotheses; Experiment; Defensive ad following an attack is initially effective, although the impact of the attack increases over the next few weeks; Credibility; Assessment.] **124**

Exposure to Paid Advertising and Returning a Census Form. Nancy Bates and Sara K. Buckley, *Journal of Advertising Research*, 40 (January/April 2000), pp. 65–73. [Study using random-digit-dial survey data, Exposure was related to being knowledgeable about the census, Failure to uncover a direct relationship between level of exposure and likelihood of completing a form, Statistical analysis.] **125**

Gays: Feelings About Advertising and Media Used. John J. Burnett, *Journal of Advertising Research*, 40 (January/April 2000), pp 75–84. [Literature review, Hypotheses, Survey, Comparisons, Heterosexuals, Male and female homosexual consumers, Statistical analysis, Implications.] **126**

Does Your Ad Have Too Many Pictures? Surendra N. Singh, V. Parker Lessig, Dongwook Kim, Reetika Gupta, and Mary Ann Hocutt, *Journal of Advertising Research*, 40 (January/April 2000), pp. 11–27. [Literature review; Two studies, Comparisons; Ads with high and low copy-picture ratios; Varying conditions of processing effort, exposure, clutter, memory, and attitudinal effectiveness, Statistical analysis, Implications.] **127**

The Use of Concurrent Disclosures to Correct Invalid Inferences. Gita Venkataramani Johar and Carolyn J. Simmons, *Journal of Consumer Research*, 26 (March 2000), pp. 307–22. [Literature review; Theoretical framework, Four experiments; Factors; Ability, motivation, and opportunity to process; Opportunity to reflect, Cognitive capacity at encoding and judgment; Elaborate on qualified claim and disclosure; Statistical analysis.] **128**

The Impact of Ad Repetition and Ad Content on Consumer Perceptions of Incongruent Extensions. Vicki R. Lane, *Journal of Marketing*, 64 (April 2000), pp. 80–91 [Literature review, Hypotheses, Experiment, Effects, Extension evaluation, Usage intentions, Consistency judgments, Total ad-evoked and net valenced thoughts, Statistical analysis.] **129**

Which Ad Works, When, Where, and How Often? Modeling the Effects of Direct Television Advertising. Gerard J. Tellis, Rajesh K. Chandy, and Pattana Thaivanich, *Journal of Marketing Research*, 37 (February 2000), pp. 32–46. [Literature review; Model testing; Hypotheses; Mathematical equations; Effectiveness and profitability vary substantially by creative, television station, and station x time of day; Statistical analysis.] 130

Dynamic Cooperative Advertising in a Channel. Steffen Jorgensen, Simon Pierre Sigue, and Georges Zaccour, *Journal of Retailing*, 76 (Spring 2000), pp.71–92. [Discussion, Model, Propositions, Scenarios, Manufacturer, Exclusive retailer, Short- and long-term impacts, No support, Full and partial support, Mathematical equations, Assessment.] 131

The Impact of a Video Screen and Rotational-Signage Systems on Satisfaction and Advertising Recognition. Jesse N. Moore, Gregory Pickett, and Stephen J. Grove, *Journal of Services Marketing*, 13 (No. 6, 1999), pp. 453–68. [Literature review, Spectator interviews, Satisfaction due to video screen, Exposure time, Intentions to patronize sponsors, Statistical analysis, Implications.] 132

2.10 Personal Selling

See also 58, 60, 136, 138, 139, 225, 226

An Investigation of African-American Perceptions of Sales Careers. Susan DelVecchio, *Journal of Personal Selling and Sales Management*, 20 (Winter 2000), pp. 43–52. [Literature review; Research questions; Survey of students; Comparisons; Caucasian students; Sample demographics; For the majority of sales career options, no racial differences in appeal existed; Statistical analysis.] 133

An Exploratory Analysis of Salesperson Perceptions of the Criteria Used in Performance Appraisals, Job Satisfaction, and Organizational Commitment. Charles E. Pettijohn, Linda S. Pettijohn, and Albert J. Taylor, *Journal of Personal Selling and Sales Management*, 20 (Spring 2000), pp. 77–80. [Literature review; Survey of retail salespeople; The greater the level of perceived inappropriateness of evaluated criteria, the lower the level of satisfaction; Not affected by level of performance or amount of experience; Impacts; Commitment.] 134

Cognitive Complexity and Salesperson Adaptability: An Exploratory Investigation. Stephen S. Porter and Lawrence W. Inks, *Journal of Personal Selling and Sales Management*, 20 (Winter 2000), pp. 15–21. [Literature review, Hypothesis, Survey of industrial salespeople, An elaborate/cognitive complex knowledge structure will have an influence on a salesperson's predisposition to practice adaptive selling, Implications] 135

2.11 Sales Management

See also 67, 82, 83, 87, 172, 179, 226

Sales Performance: Timing of Measurement and Type of Measurement Make a Difference. Lawrence B. Chonko, Terry N. Loe, James A. Roberts, and John F. Tanner, *Journal of Personal Selling and Sales Management*, 20 (Winter 2000), pp. 23–36. [Literature review, Survey of industrial salespeople, Measurements at different times not likely related, Relationships between different measures not strong, Type of measure and when it was taken had an impact related to a set of predictor variables.] 136

The Sales–Marketing Interface in Consumer Packaged-Goods Companies: A Conceptual Framework. Belinda Dewsnap and David Jobber, *Journal of Personal Selling and Sales Management*, 20 (Spring 2000), pp. 109–19. [Literature review, Model presentation, Research propositions, Organizational factors, Perceived amount of intergroup integration, Business performance, Assessment.] 137

Peak Performance in the Sales Force. Steven J. Skinner, *Journal of Personal Selling and Sales Management*, 20 (Winter 2000), pp. 37–42. [Literature review, Corporate culture, Discretionary effort, Internal marketing, Assessment, Managerial implications.] 138

Deep Relationships: The Case of the Vanishing Salesperson. David T. Wilson, *Journal of Personal Selling and Sales Management*, 20 (Winter 2000), pp. 53–61. [Literature review, Buyer–seller relationships (transactional, facilitative, integrative), Deintegration and technology, Impacts, Sales organization, Sales management.] 139

The True Price of Penalties. Eugene H. Fram and Michael S. McCarthy, *Marketing Management*, 8 (Fall 1999), pp. 49–56. [Consumer study, Number experiencing penalty, Types, Fairness and trade-offs, Outcomes, Examples, Managerial Implications.] 140

What Keeps You Up at Night? Andy Cohen, *Sales and Marketing Management*, (February 2000), pp. 44–48, 50, 52. [Discussion, Challenges, Hiring and retaining top performers, Selling on the Internet, Anticipating new competitors, Getting out of the office, Assessment.] 141

Tuning in to the Right Channel. Lambeth Hochwald, *Sales and Marketing Management*, (March 2000), pp. 66–68, 70, 72, 74. [Sales strategies, Let customers dictate channels, Profiling through marketing databases, Matching channels with markets, Integrating a new channel, E-mail, Assigning roles, Direct sales and distributors, Examples.] 142

3. SPECIAL MARKETING APPLICATIONS

3.1 Industrial

See also 45, 46, 70, 76, 85, 86, 93, 98, 107, 110, 112, 115, 135, 136, 159, 161, 165, 173, 202, 205, 229

Intuition Can Help in Segmenting Industrial Markets. Paul Millier, *Industrial Marketing Management*, 29 (March 2000), pp. 147–55. [Literature review, Intuitive grouping of uses into applications, First rationalization with two logical tests, Function/application matrix, Technical segmentation, Assessment.] 143

The Effect of "Front-Loading" Problem-Solving on Product Development Performance. Stefan Thomke and Takahiro Fujimoto, *Journal of Product Innovation Management*, 17 (March 2000), pp. 128–42. [Literature review, Field study, Project-to-project knowledge transfer (postproject learning), Rapid problem solving (combining new with traditional technologies), Examples, Managerial implications.] 144

What Buyers Look for in Contract Manufacturers. James Carbone, *Purchasing*, 128 (March 23, 2000), pp. 32–33, 36, 38. [Survey, Outsourcing, Reasons, Costs, Technical know-how, Build- and configure-to-order business, E-commerce, Buyer's role, Quality control, Examples.] 145

The Virtual Corporation: Where Is It? Anne Millen Porter, *Purchasing*, 128 (March 23, 2000), pp. 40, 42–44, 46, 48. [Survey of firms, Outsourcing, Contract manufacturing, High technology, Technology transfer, Problems, Corporate culture, Intellectual property, Developing contacts, Control, Market conditions, Examples.] 146

3.2 Nonprofit, Political, and Social Causes

See also 23, 28, 100, 124, 125, 154, 182, 194, 223

Greening Capitalism: Opportunities for a Green Commodity. Andrea Prothero and James A. Fitchett, *Journal of Macromarketing*, 20 (June 2000), pp. 46–55. [Theoretical tradition of post-Marxist cultural criticism; Revision of prevailing paradigms regarding the structure, nature, and characteristics of capitalism; Responsibilities of marketing; Implementation, Examples.] 147

Credit Card Use and Abuse by Today's and Tomorrow's Elderly. Evgenia Apostolova and Kenneth C. Gehrt, *Journal of Nonprofit and Public Sector Marketing*, 7 (No. 1, 1999), pp. 25–49. [Literature review, Hypotheses, Survey, Target markets, Baby boomers, Older people, Comparisons, Attitudes, Social-structured characteristics, Socialization agents, Behavioral differences, Statistical analysis, Implications.] 148

Market Orientation: A Framework for Public Institutions. Amparo Cervera, Alejandro Molla, and Haydee Calderon, *Journal of Nonprofit and Public Sector Marketing*, 7 (No. 1, 1999), pp. 3–23. [Literature review; Theoretical dimensions; Model development; Information generation, dissemination, and response; Assessment.] 149

The Role of Government in Promoting Exports During an Economic Recession. Michael T. Ewing, Albert Caruana, and B. Ramaseshan, *Journal of Nonprofit and Public Sector Marketing*, 7 (No. 1, 1999), pp. 51–61. [Survey of exporters, Perceptions, Institutional support before and during recession, Large and small exporters, Effect of recession, Volume of exports, Statistical analysis, Australia.] 150

Market Segmentation: The Case of Religious Services. Noel Y.M. Siu and Ka-shing Woo, *Journal of Segmentation in Marketing*, 3 (No. 2, 1999), pp. 43–60. [Literature review, Survey of church members, Factors, Church leadership style, Church activities, Communication and caring, Spiritual growth, Physical environment, Segments (care seeker, dissatisfier, satisfier), Statistical analysis, Marketing implications.] 151

Assessing the Marketing and Development of Health Research Organizations. Dennis R. McDermott, Howard P. Tuckman, and David J. Urban, *Marketing Health Services*, 20 (Spring 2000), pp. 28–31. [Survey of CEOs, Emphasis and effectiveness ratings, Fund-raising activities, Tactical variables (media, motives, information management), Resource adequacy, Assessment, Implications.] 152

3.3 International and Comparative

See also 15, 16, 43, 47, 68, 69, 79, 98, 99, 105, 106, 121, 150, 185, 199, 214

Business Horizons, 43 (January/February 2000), pp. 5–38 [Four articles on doing business in China, Focus on guanxi, Cultivating as a foreign investor strategy, Insider–outsider perspectives, Marketing strategy, Relationship marketing, Examples.] 153

An Emerging Green Market in China: Myth or Reality? Ricky Y.K. Chan, *Business Horizons*, 43 (March/April 2000), pp. 55–60. [Survey of households, Environmental attitudes, Market segments (basic greens, sprouts, eco-bystanders, basic browns), Demographic characteristics, Green consumption behaviors, Implications.] 154

Managing Global Expansion: A Conceptual Framework. Anil K Gupta and Vijay Govindarajan, *Business Horizons*, 43 (March/April 2000), pp. 45–54 [Discussion; Choice of products and strategic markets; Mode of entry; Transplanting core practices; Anticipating needs and/or actions of host country customers, competitors, and government; Speed of global expansion; Examples.] 155

Trade in Thailand: A Three-Way Cultural Comparison. Chanthika Pornpitakpan, *Business Horizons*, 43 (March/April 2000), pp. 61–70 [Social structure, Values (individualism–collectivism, locus of control, uncertainty avoidance, relationship orientation, sensitivity, repayment of favors, situation/flexibility orientation, materialism, hedonism, activity/handling mode), Communication styles, Development levels, Assessment.] 156

Understanding the Market Environment of India. Raja Ramachandran, *Business Horizons*, 43 (January/February 2000), pp. 44–52. [Discussion, True market potential, Market diversity, Economic and political environments, Attitudes (price awareness and frugality, food habits and thoughts, nationalism and brand loyalty), Market strategy, Marketing mixes, Examples.] 157

Going Global: Lessons from Late Movers. Christopher A. Bartlett and Sumantra Ghoshal, *Harvard Business Review*, 78 (March/April 2000), pp. 132–42. [Study of multinationals, Value curve, Strategies (benchmark and sidestep, confront and challenge), Learning, Commitment to global entrepreneurialism, Openness to new ideas, Case study, Pharmaceutical industry.] 158

A Difference of Perspective: An Exploratory Study of Omani and Expatriate Values and Attitudes. Kermit W. Kuehn and Yousef Al-Busaidi, *International Journal of Commerce and Management*, 10 (No 1, 2000), pp. 74–90. [Survey of manufacturing/processing firms, Effects, Ethnocentric work stations, Work commitment, Personal life values, Statistical analysis, Managerial implications.] 159

Usage of Corporate Career Development Activities by Expatriate Managers and the Extent of Their International Adjustment. Jan Selmer, *International Journal of Commerce and Management*, 10 (No 1, 2000), pp. 1–23 [Literature review; Hypotheses, Survey; General, interaction, and work adjustments; Subjective well-being; Career development comparisons; North American and European managers; Statistical analysis; Implications.] 160

Customizing Core Competencies: The Regional Challenge. Shahid Siddiqi, *International Journal of Commerce and Management*, 10 (No 1, 2000), pp 91–104. [Globalization, Competitive strategy, Mind-set, Orientation of MNCs, Spatial markets, Assessment, Managerial implications.] 161

Cultural Values Reflected in Theme and Execution: A Comparative Study of U.S. and Korean Television Commercials. Bongjin Cho, Up Kwon, James W. Gentry, Sunkyu Jun, and Fredric Kropp, *Journal of Advertising*, 28 (Winter 1999), pp 59–73. [Literature review, Hypotheses; Content analysis; Factors; Collectivism; Individualism; Past, present, and future orientation; Nature (manipulation, oneness, subjugation); Low and high context; Statistical analysis.] 162

Examining the Longevity of New Agency Accounts: A Comparative Study of U.S. and U.K. Advertising Experiences. Mark Davies and Mel Prince, *Journal of Advertising*, 28 (Winter 1999), pp. 75–89. [Literature review, Model presentation, Hypotheses, Data collection, Impacts, Agency size (billings and employees), Agency age, Structural characteristics, Statistical analysis, Managerial implications.] 163

Building Destination Brands: The Cases of Wales and Australia. Nigel J. Morgan and Annette Pritchard, *Journal of Brand Management (UK)*, 7 (November 1999), pp 103–18. [Discussion, Establishing core values, Creating unique and differentiated identities, Markets (primary, secondary, potential), Brand positioning, Benefits, Personality, Assessment.] 164

Development and Perception of TQM in Small Manufacturers: An Exploratory Study in Korea. Choong Y. Lee, *Journal of Business and Entrepreneurship*, 12 (March 2000), pp. 67–86. [Total quality management, Survey, Attitudes, Implementation, Expected benefits, Impact on performance, Problems, Assessment.] 165

Factors Affecting Export Intermediaries' Service Offerings: The British Example. George I. Balabanis, *Journal of International Business Studies*, 31 (First Quarter 2000), pp. 83–99 [Discussion, Hypotheses, Survey of managers, Impacts, Exporting role, Number of employees, Amount of undifferentiated products carried, Number of suppliers, Number of countries served, Regression analysis, Implications.] 166

The Influence of Triad Nations' Environments on Price–Quality Product Strategies and MNC Performance. Lance Eliot Brouthers, Steve Werner, and Erika Matulich, *Journal of International Business Studies*, 31 (First Quarter 2000), pp. 39–62 [Cross-national contingency framework, Regional stereotypes, Firm-specific advantages, Propositions, Data collection, Japan (superior value), EU (premium), U.S. (economy), Regression analysis, Managerial implications] 167

The Development and Impact of Marketing Capabilities in Central Europe. John Fahy and others, *Journal of International Business Studies*, 31 (First Quarter 2000), pp. 63–81. [Literature review, Propositions, Survey of firms, Impacts, Market orientation, Time horizon of strategic decision making, Positioning capability, Foreign participation, Wholly owned subsidiaries, International joint ventures, Statistical analysis, Implications.] **168**

Joint Venture Formation of Very Large Multinational Firms. Yigang Pan and Xiaolian Li, *Journal of International Business Studies*, 31 (First Quarter 2000), pp. 179–89. [Literature review, Hypotheses, Data collection (*China Business Review*), Effects, Equity stakes, Alignment with other foreign firms, Engage in global industries, Invest in large-scale joint ventures, Risk, Statistical analysis, China.] **169**

Parent Firm Performance Across International Joint Venture Life-Cycle Stages. Jeffrey J. Reuer, *Journal of International Business Studies*, 31 (First Quarter 2000), pp. 1–20. [Literature review, Data collection (Funk and Scott), Shareholder wealth effects, Formation, Termination, Attractive, Unattractive, Statistical analysis, Implications.] **170**

Global Diffusion of Technological Innovations: A Coupled-Hazard Approach. Marnik G. DeKimpe, Philip M. Parker, and Miklos Sarvary, *Journal of Marketing Research*, 37 (February 2000), pp. 47–59. [Literature review, Model development and application, Approach recognizes the conceptual difference between the timing of a country's introduction of the new technology (implementation stage) and the timing of the innovation's full adoption in the country (confirmation stage).] **171**

The Moderating Effects of Cultural Context in Buyer–Seller Negotiation. Alma Mintu-Wimsatt and Jule B. Gassenheimer, *Journal of Personal Selling and Sales Management*, 20 (Winter 2000), pp 1–9. [Literature review, Model proposal, Hypotheses, Survey of industrial exporters, Comparisons, High- and low-context cultures, Problem solving, Gender, Education, Experience, Statistical analysis, Managerial implications, U.S., Philippines.] **172**

Launch Decisions and New Product Success: An Empirical Comparison of Consumer and Industrial Products. Erik Jan Hultink, Susan Hart, Henry S.J. Robben, and Abbie Griffen, *Journal of Product Innovation Management*, 17 (January 2000), pp. 5–23. [Literature review, Survey of firms, Variables, Strategy decisions, Objectives, Tactics, Effects, The Netherlands, UK, U.S.] **173**

Shopping Values of Russian Consumers: The Impact of Habituation in a Developing Economy. Mitch Griffin, Barry J. Babin, and Doan Modianos, *Journal of Retailing*, 76 (Spring 2000), pp. 33–52. [Literature review, Hypotheses, Survey of consumers, Personal shopping value scale, Adaptation, Hedonic and utilitarian values, Comparisons, U.S., Statistical analysis.] **174**

Journal of Services Marketing, 13 (No. 4 and 5, 1999), pp. 278–418. [Eleven articles on international services marketing, Market strategy, Transnational service operations, Perspectives, Technology, Trends, Obstacles, Issues, Culture shocks, Review of research, Service quality by relationships, Advertising appeals, Purchase motivation, Marketing orientation, Distribution channels.] **175**

Advantageous Competence of Owner/Managers to Grow the Firm in Poland: Empirical Evidence. Julita Wasilczuk, *Journal of Small Business Management*, 38 (April 2000), pp. 88–94. [Literature review, Survey, Competence components (education, experience, motivation, personal traits, general management, marketing knowledge), Growth perspectives, Assessment.] **176**

Internationalization of Small Firms: An Examination of Export Competitive Patterns, Firm Size, and Export Performance. James A. Wolff and Timothy L. Pett, *Journal of Small Business Management*, 38 (April 2000), pp. 34–47. [Literature review, Hypotheses, Survey, Competitive patterns resulting from size-related resource bases, Export intensity across size categories, Statistical analysis.] **177**

The Asian Apocalypse: Crisis Marketing for Consumers and Businesses. Swee Hoon Ang, Siew Meng Leong, and Philip Kolter, *Long Range Planning (UK)*, 33 (February 2000), pp. 97–119. [Discussion, Consumer reactions, Adjustments (product, price, promotion, shopping), Marketing mixes, New market opportunities, Examples.] **178**

Global Sales on the Line. Erika Rasmusson, *Sales and Marketing Management*, (March 2000), pp. 76–78, 80–82. [Business growth, Call centers, Factors, Adopt early, Flexibility, Hiring challenges, Different countries, Examples.] **179**

Global Online Retailing: An Ernst and Young Special Report. *Stores*, Section 2 (January 2000), pp. 9–165. [Trends, Customers, Companies, Product categories, Countries, Statistical data.] **180**

3.4 Services

See also 2, 15, 16, 18, 20, 21, 22, 27, 29, 44, 49, 50, 72, 132, 148, 151, 152, 164, 166, 175, 210, 211, 215, 218, 228

Fly Me to the Moon. Stacy H. Small, *American Demographics*, 22 (March 2000), pp. 50–52. [Travel agents, Information, Databases, Surveys, Clients, Demographics, Psychographics, Examples.] **181**

Beyond Economics. Roberto Suro, *American Demographics*, 22 (February 2000), pp. 48–55. [Discussion, Market segments, Age groups, Health insurance status, Race, Ethnicity, Advertising campaigns, Language, Federal regulations, Compliance issues, Access, Assessment.] **182**

Performance Productivity and Quality of Frontline Employees in Service Organizations. Jagdip Singh, *Journal of Marketing*, 64 (April 2000), pp. 15–34. [Literature review, Model proposal, Hypotheses, Data from customer service and bill collection representatives, Comparisons, Coping resources, Role stressors, Burnout tendencies, Performance, Job outcomes, Multigroup path analysis, Implications for theory and practice.] **183**

Franchise Relocation and Sport Introduction: A Sports Marketing Case Study of the Carolina Hurricanes' Fan Adoption Plan. Scott W. Kelley, K. Douglas Hoffman, and Sheila Carter, *Journal of Services Marketing*, 13 (No. 6, 1999), pp. 469–80. [Historical discussion, Market strategy (awareness, interest, evaluation, trial, adoption), Assessment.] **184**

Closing the Gaps: Service Quality in Sport Tourism. Des Thwaites, *Journal of Services Marketing*, 13 (No. 6 1999), pp. 500–16. [Literature review, Models, Applications, Supply and demand, Pricing structure, Publicity, Intercustomer conflict, Customer needs, Conflict of interests, Influences and stimuli, Communication strategy, Case study, Canary Islands.] **185**

Forecasting U.S. Health Care's Future. *Marketing Health Services*, 20 (Spring 2000), pp. 5–13. [Trends, Demographic, Health plans/insurance, Hospitals/physicians, Technology, Consumerism, Public health, Legislation, Projections.] **186**

Patient–Physician Relationships in Information Age. Grace L. Johnson and Arkalgud Ramaprasad, *Marketing Health Services*, 20 (Spring 2000), pp. 21–27. [Trends, Health information on the Internet, Direct-to-consumer advertising of prescription drugs, Matrix, Intent of information provider, Consequences for patient/physician, Assessment, Implications.] **187**

Dimensions of the Ideal HMO Brand. Russell Lacey, *Marketing Health Services*, 20 (Spring 2000), pp 32–35. [In-depth interviews, Households, Role of brands, Selection, Factors (outstanding service, patient focus, comfort and security), Assessment, Marketing implications.] **188**

Capturing and Retaining More Referral Sources. John F. O'Malley, *Marketing Health Services*, 20 (Spring 2000), pp. 15–19. [Health care providers, Referral strategy and options, Marketing approaches, Financial impact analysis, Profitability and volume tracking, Assessment, Guidelines] **189**

The Move to Solutions Providers. Stephen W. Brown, *Marketing Management*, 9 (Spring 2000), pp. 10–11. [Transformation of goods-dominant to goods-and-services firms, Technology, Global, Customer demand, Profitability, Examples.] **190**

4. MARKETING RESEARCH

4.1 Theory and Philosophy of Science

See also 22, 59, 91, 106, 108, 117, 131, 147, 209, 213, 221

Spatial Competition and Bounded Rationality: Retailing at the Edge of Chaos. Robert E. Krider and Charles B. Weinberg, *Geographical Analysis*, 29 (No. 1, 1997), pp. 16–34. [Literature review, Model development, Impacts, Environmental adversity, Transient and steady state behavior, Self-organized criticality (power laws, poised, weakly chaotic, extreme robustness), Assessment.] **191**

Assessing the Competitive Interaction Between Private Labels and National Brands. Ronald W. Cotterill, William P. Putsis Jr., and Ravi Dhar, *Journal of Business*, 73 (January 2000), pp. 109–37. [Literature review, Data collection, Price reaction equations, Product categories, Geographic markets, Consumer response to price and promotion decisions and firm pricing behavior jointly determine observed market prices and market shares.] **192**

Finding a Good Price: A Tutorial. David C. Carlson, *Journal of Business and Entrepreneurship*, 12 (March 2000), pp. 95–106. [Profit-maximizing model, Demand function, Straight line assumption, Competitive considerations, Application.] **193**

Market Mechanisms and the External Benefits of Consumption. Jack Cadeaux, *Journal of Macromarketing*, 20 (June 2000), pp. 11–22. [Literature review, Model development, Factors, Meritorious behavior, Public goods, Negative consumption externalities, Consumption surprises, Exchange, Typology, Examples.] **194**

Schumpeter—Fifty Years Later. Donald F. Dixon, *Journal of Macromarketing*, 20 (June 2000), pp. 82–88. [Discussion, Capitalist system, Circular flow of money and goods, Innovation, Development theory, Process of creative destruction, Role of the entrepreneur, Projections, Implications for marketing historians.] **195**

Fernand Braudel on Historiography and Its Implications for Marketing History. Ronald Savitt, *Journal of Macromarketing*, 20 (June 2000), pp. 89–93. [Discussion, Core ideas (consideration of time, environment, social sciences, bringing together factors that affect change), Assessment.] **196**

The Substantiality Test: Meaning and Application in Marketing Segmentation. John Stanton and Guilherme D. Pires, *Journal of Segmentation in Marketing*, 3 (No. 2, 1999), pp. 105–15. [Literature review, Model presentation, Firm objectives, Economic theory, Profitability, Producer surplus, Assessment.] **197**

Mathematical Properties of the Optimal Product Line Selection Problem Using Choice-Based Conjoint Analysis. Kyle D. Chen and Warren H. Hausman, *Management Science*, 46 (February 2000), pp. 327–32. [Discussion, Profit maximization model, Product design, Independence of irrelevant alternatives, Totally unimodular binary integer program, Assessment.] **198**

An "Alternating Recognition" Model of English Auctions. Ronald M. Harstad and Michael H. Rothkopf, *Management Science*, 46 (January 2000), pp. 1–12. [Discussion, Equilibrium bidding, Revocable exits, Information disclosure, Ordinal rank uncertainty, Extensions, Assessment.] **199**

A Survey of Algorithms for Convex Multicommodity Flow Problems. A Ouorou, P. Mahey, and J-Ph. Vial, *Management Science*, 46 (January 2000), pp. 126–47. [Literature review, Network optimization, Solution techniques (flow deviation, projection, cutting plane algorithms, decomposition principle), Numerical experiments.] **200**

Decision Bias in the Newsvendor Problem with a Known Demand Distribution: Experimental Evidence. Maurice E. Schweitzer and Gerard P. Cachon, *Management Science*, 46 (March 2000), pp. 404–20. [Literature review, Models, Behavioral operations, Profit maximization, Inventory decisions, Anchoring, Minimizing ex post inventory error, Statistical analysis.] **201**

A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Viswanath Venkatesh and Fred D. Davis, *Management Science*, 46 (February 2000), pp. 186–204. [Discussion, Hypotheses, Voluntary and mandatory usage, Perceived usefulness, Ease of use, Impacts, Social influence and cognitive instrumental processes, Statistical analysis.] **202**

Optimal Dynamic Pricing for Perishable Assets with Nonhomogeneous Demand. Wen Zhao and Yu-Sheng Zheng, *Management Science*, 46 (March 2000), pp. 375–88. [Model presentation, Revenues, Yield management, Inventory, Finite horizon, Diminishing marginal returns, Threshold policies, Numerical examples.] **203**

4.2 Research Methodology

See also 1, 2, 5, 7, 8, 10, 11, 12, 13, 14, 29, 37, 41, 44, 56, 57, 62, 66, 78, 95, 108, 109, 110, 111, 116, 117, 120, 121, 122, 123, 125, 126, 127, 128, 129, 130, 132, 136, 152, 162, 163, 174, 181, 183, 224, 229

How Do You Like Your Beef? Kendra Parker, *American Demographics*, 22 (January 2000), pp. 35–37. [Ethnographic research, Attitudes and behavior, Intense observation with customer interviews, Costs, Impacts, Market strategy, Global studies, Examples.] **204**

Likelihood of Participating in Mail Survey Research: Business Respondents' Perspectives. Thomas V. Greer, Nuchai Chuchinprakarn, and Sudhindra Seshadri, *Industrial Marketing Management*, 29 (March 2000), pp. 97–109. [Literature review, Two studies, Impacts, Day of week, Questionnaire length, Content, Sponsorship, Postage-paid reply envelopes, Prenotification, Follow-up, Assessment.] **205**

A Model for Diagnosing and Reducing Nonresponse Bias. Richard Colombo, *Journal of Advertising Research*, 40 (January/April 2000), pp. 85–93 [Discussion, Adjusting survey data when callbacks are made, Uses a pattern of responses from the callbacks to obtain an estimate for the probability that a household responds to the survey, Simulation study.] **206**

The Reputation Quotient: A Multi-Stakeholder Measure of Corporate Reputation. Charles J. Fombrun, Naomi A. Gardberg, and Joy M. Sever, *Journal of Brand Management (UK)*, 7 (March 2000), pp. 241–55. [Discussion, Techniques, Instrument prototypes, Testing and refinement, Validation and norming, Assessment.] **207**

Forecast Reconciliation: Whom Do You Trust? Larry Lapide, *Journal of Business Forecasting*, 19 (Spring 2000), pp. 16–18. [Discussion, Credibility, Sources (marketing, sales, statistical baseline, customers, suppliers), Methods to reconcile multiple sets of forecasts (simple averaging, weighted average, time-based, sequential adjustment), Assessment.] **208**

The Tao of Forecasting. Stephen R. Riehm, *Journal of Business Forecasting*, 19 (Spring 2000), pp. 22–23, 28–29. [Parallels between the philosophy of Eastern religions and forecasting; Unity of all things; Karma (action); Absolute knowledge; All things as interdependent and inseparable; To achieve enlightenment, one has to emerge into oneness, Assessment.] 209

Forecasting for Airline Revenue Management. Hossam Zaki, *Journal of Business Forecasting*, 19 (Spring 2000), pp. 2–4, 6. [Discussion, Techniques, Problems, Overlooking, Discount allocation, Origin–destination, Group management, Point of sale, Impacts, Capacity, Demand, Prices, Examples.] 210

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Book Reviews

TERRY CLARK
Editor
Southern Illinois University

Susan P. Douglas

Exploring New Worlds: The Challenge of Global Marketing

Early Explorations: Learning from the Past

My passion for exploring new worlds began as a child with books and a very eclectic education. An insatiable curiosity and a penchant for asking questions led me to constantly challenge the limits of my own knowledge and seek to broaden my horizons. By the age of seven I was a voracious reader, and being very shortsighted, fat, and poor at games, I escaped the world by retreating to the apple tree with my nose in a book. From my lofty perch, I enjoyed the magical company of fictitious characters. I remember reading *Alice in Wonderland* and *Alice Through the Looking Glass* and being totally fascinated by the curiosities that Alice encountered. In particular, I was struck by the practical philosophies of the creatures she met—the White Rabbit who was always late, the Red Queen always running to stay in the same place—how all familiar today! Like many children, I enjoyed reading about travel and adventure, from fictitious accounts such as *Gulliver's Travels*, *Treasure Island*, or Rudyard Kipling's stories of India to the travels of Hester Stanhope in the Middle East and her encounters with the populations in these countries. I immediately resolved that I too wanted to travel when I was older.

At boarding school, I had plenty of time to read. Whenever possible, I would avoid playing the mandatory afternoon games and go to read in the library, curled up in a comfortable leather chair. I set myself the task of reading through the entire fiction section from A to Z, but abandoned the project after D. Dickens proved entirely too much for me! During this time, I became particularly interested in military history and read Churchill's *History of Marlborough* as well as military histories of Cromwell, Alexander the Great, and General Sun Tse. Little did I realize then how useful these would be later on in my life in writing about competitive strategy.

I also became interested in the medieval era and the Renaissance. Studying the Renaissance opened up new horizons, and I was fascinated by the amazing outpouring of ideas, philosophy, and artistic treasures that this era produced. I was especially intrigued by the bridging of the scientific and artistic worlds in the work of Leonardo da Vinci and others. At the same time, I became interested in the changes in the economic underpinnings of this civilization—from the accumulation of wealth and power by the Catholic Church and its channeling of artistic talent into the adornment of churches and religious artifacts to a new era, when wealth and patronage shifted into the hands of the mercantile class, resulting in a new freedom of artistic expression and learning, centered on individualistic values (as exemplified in Machiavelli's *The Prince*).

Studying the economic history of the Middle Ages at the University of Manchester, I became fascinated by the role of the monastic orders in the growth and organization of commerce. Later, I realized that the Cistercian and Benedictine orders, in particular, were early examples of highly effective international marketing organizations. The Cistercians, for example, raised sheep on their lands in Yorkshire, using lay brothers to look after and shear the sheep, and sent the wool through their network of monasteries to weavers in Flanders, where the cloth was eventually sold.

Political philosophy and the history of economic thought also began to fascinate me. I had read Aristotle and Plato while at boarding school, but now I turned to the writings of philosophers, Hume, Mill, Rousseau, and Hobbes. This helped me understand the value systems of Western societies and the principles by which they function. Recently, after reading Fukuyama's (1995) *Trust*, I reread these philosophers and was struck by how deeply my own values are still grounded in these principles, despite the amount I travel. I think this has often made it difficult for me to appreciate the value systems of other societies, particularly Asian societies rooted in Confucian philosophy. Yet at the same time, I began to understand how closely linked value systems are to the effective functioning of an economic order or a social system. This was brought home to me on visiting Russia last year, where it seemed that at least part of the current difficulties and economic uncertainty stemmed from an absence of respect for private property and of individual

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rights that are fundamental to the effective functioning of a free-market economy.

Learning Marketing Fundamentals in a New World

After graduating from Manchester University in 1962, I spent two years in Paris, studying politics at L'Institut des Etudes Politiques, or "Sciences Pô". This was my first experience of living and studying in another culture for some period of time. It was also my first exposure to the differences in thought processes and intellectual paradigms from one culture to another. Continuing my explorations, I decided to come to the United States to study business at the University of Pennsylvania. I wanted to go to Harvard Business School, but at the time women were not admitted. My application to INSEAD had also been rejected for the same reason. In both cases, I applied a year too soon. Fortunately for me, Wharton was more enlightened.

At Penn, I applied for a job as Reavis Cox's research assistant. He had just returned from a trip to Europe and was working on a study comparing marketing systems throughout Europe. So began my involvement in marketing. Encouraged by Reavis Cox, I switched from economics to marketing. I was impatient with economic models that seemed to have little to do with the real world, and I was attracted to a discipline that was closer to the ground. At that time, there was a strong emphasis on theory in the marketing doctoral program—stimulated by Cox, Wroe Alderson, and Mike Halbert. As a result, I read avidly such groundbreaking works as the first and second volumes in Cox and Alderson's *Theory in Marketing* series (1950; Cox, Alderson, and Shapiro 1964) and Halbert's *Meaning and Sources of Marketing Theory* (1965).

I remember struggling to understand some of the concepts, trying to work out how they fit together. Often, scholars seemed to have different perspectives of similar phenomena. I was particularly struck with how this contrasted with the neatly integrated theories I was accustomed to from my training in economics. Yet I was also intrigued by the scope and richness of these concepts and the insights they provided into the complex workings of a macro marketing system. I remember thinking how logical and clear Cox's flow approach was in analyzing the value added by the macromarketing system (Cox 1965a). Equally, I was intrigued by Alderson's (1957, 1965) concepts of exchange system and of functionalism.

At the same time, my interest in marketing research was stimulated by Paul Green, though I fear that my lack of statistical training was a severe handicap to mastering decision-making theory and the multivariate analytical techniques to which I was exposed. I also worked as a research assistant at the Marketing Science Institute on its extensive project that compared systems in countries at different levels of development (Liander et al. 1967). Jerry Wind encouraged my early interest in international marketing. The internationalization of business was only just beginning in the United States, as firms started to venture overseas. The primary focus was to study the environmental context of business in different countries and parts of the world. This in turn fit well with my own interest in studying different cultures and comparing distribution systems, in which I had been encouraged by Reavis Cox.

In those early days, there were also the challenges of being a woman in a predominantly masculine world. I had been accustomed to this as a student at Manchester, where there were only three women in a class of 200, so it was very obvious when we missed lectures. There were also few women in the doctoral program at Penn, and we probably received more than our fair share of attention. I remember how nervous I was giving my first paper with Frank Carmone at a 1971 AMA conference. To make matters worse, the paper was on women's fashions, "the midi and the mini." My heart sank as I got up to speak and realized I was looking out at a sea of male faces. Fortunately, Paul Green was the chairman, and he had encouraged me to splurge on a designer midi dress for the presentation. So if the members of the audience were not impressed with the presentation, at least they were treated to the novelty of live props in the latest fashion. I recently wore the dress again, reminding myself how fads and fashion come and go, somewhat like research topics in marketing.

But not all my experiences were quite so fortunate. On one occasion, I was working with Jerry Wind and an Israeli executive on a paper. Because authorship was listed in alphabetical order, my name came first. One day, Jerry called me into his office and with a puzzled look on his face told me that the executive had written to say that he could not accept being second author to a woman. Jerry's comment was characteristic: "That's funny. I never think of you as a woman!" Needless to say, this left me with somewhat mixed emotions.

Encountering New Paradigms and Perspectives

After teaching for a couple of years at Temple University, I returned to France to teach at HEC, now Centre HEC, at Jouy-en Josas outside Paris. I continued to work on international marketing, though this time exploring differences in consumer behavior from one country to another. I was particularly interested in the impact of the changing role of women on shopping patterns and behavior, as this seemed to be one of the most critical changes taking place in society and appeared to have substantially different implications from one country to another. Although I learned about the significance of social roles, it was really the methodological aspects of this research that I found the most intriguing.

Because I was conducting research in different languages, I became increasingly interested in how language appeared to influence thought patterns and their expression (Whorf 1956). Not only were there practical issues, such as translation and sampling, but also I began to wonder about the similarity of concepts and constructs across countries and cultures. This, in turn, led me to delve into how other disciplines had dealt with the issues of cross-cultural research. So I read widely in comparative sociology and political science (Elder 1976; Przeworski and Teune 1970) and, in particular, in cross-cultural psychology and cultural anthropology (Berry and Dasen 1974; Triandis 1972; Triandis, Malpass, and Davidson 1973). In this literature, I found extensively discussed issues similar to those that I was grappling with: how to test the universality of theories and concepts and to examine variation in their expression in other contexts and cultures (Berry 1969; Pike 1966).

I began to dig more deeply to try to understand culture and the impact of cultural context on marketing, dipping into classics such as Linton (1973) and Tyler (1891), as well as modern perspectives such as Spradley and McCurdy (1972) and Hall (1976). This again taught me the value and the insights to be gained from looking at a subject or phenomenon through the lens of scholars from different disciplines. I found myself fascinated by the participant–observer approach used by Spradley to observe the behavior of a cocktail waitress in bars in Boston (Spradley 1972) or to study a sales assistant in a jewelry store (Spradley 1973). The richness of the data and the deep understanding of culture—in particular of the linguistic threads of culture—seemed invaluable. Classics such as Herskovits (1955) or Kroeber (1923) provided a framework and furnished the building blocks for comparing cultural patterns and helped me see cultures as values and artifacts as well as a way of living and communicating. Each perspective shed light on yet another facet of culture and at the same time underscored its complexity and pervasiveness.

At the European Institute for Advanced Studies in Management in Brussels, I again encountered new perspectives and different research paradigms. Colleagues from the Scandinavian countries, such as Lars Gunnar Mattson, introduced me to some new and different paradigms. These were intriguing, because they provided a different perspective on marketing that reflected the societal and economic context of these countries. The Danish theory of marketing resonated with the strong concern with social issues and consumerism in that country. Similarly, the Scandinavian theory of internationalization seemed to reflect the experience of the Swedish multinationals (Hakansson 1982; Johanson and Wiedersheim-Paul 1975). All of this suggested to me that theories and concepts were strongly contextually driven rather than abstract and universally applicable (as I had previously believed). I was also lucky to be at the institute at a time when Geert Hofstede (1980) was working on his seminal study on culture and to enjoy many stimulating discussions on the topic.

In France I encountered the work of the sociologists Baudrillard (1970, 1972), Barthes (1957), and Bourdieu (1982). They provided fresh perspectives for interpreting the world in terms of signs and symbols. Instead of emphasizing material or economic value, these scholars focused on the symbolic meaning of objects: how people perceived or used objects to express their individual identity and in some cases to delineate their position or status in society. This represented a markedly different viewpoint from the Fishbein (multiattribute) model of decision making then in vogue in the United States. I was again struck by the way different philosophical traditions often produce different theories. Differences in emphasis on collective societal goals and identity compared with individual goals lead to different perspectives.

Returning to the New World

On returning to the United States in 1978, I began reimmersing myself in the logical positivist paradigm and continued to explore international marketing, though this time from a strategic perspective. I also broadened the geographic scope of my interests, as rapid rates of growth in Asia were leading firms to investigate opportunities in Japan and the four Asian tigers: Taiwan, South Korea, Singapore, and Hong Kong. My early education, strongly rooted in Western principles and philosophy, had provided little exposure to Asian philosophy and culture. In addition, linguistic barriers posed a major challenge. Again, I was faced with the challenge of trying to understand cultures very different from my own and again turned to sociology and anthropology for help.

I also decided that it was time to try to put together in a book what I had learned about research on international markets. So in 1983, C. Samuel Craig, my long-suffering collaborator and intellectual accomplice for the past 21 years, and I published the first edition of *International Marketing Research.* Our aim was to provide an overview of practical issues in designing and conducting multicountry studies, combined with theoretical underpinnings from other comparative social sciences, particularly cross-cultural psychology. A key theme was the challenge of achieving comparability and equivalence in cross-national and cross-cultural research, which at the time was not widely recognized (Berry 1989). Seventeen years later, we have just completed a revision (Craig and Douglas 2000). Many issues remain unchanged, but much progress has been made since the first edition, particularly in analytical techniques. I believe we were able to incorporate much of this in the revised edition. For example, there have been advances in the development of hierarchical analytical techniques better suited to the structure of cross-national and cross-cultural research (van de Vijver and Leung 1997). Much remains to be done, however, especially in scale design and development and more generally in the development of instruments that combine both etic and emic components.

Stimulated by my interaction with my colleagues in international business, I became interested in the strategic aspects of international marketing. This led me to another body of literature—namely, strategic management and especially international business aspects—and books such as those by Prahalad and Doz (1987), Bartlett and Ghoshal (1989), and Porter (1986, 1990). Being located in New York made it difficult to design and collect multicountry data. However, contacts and interaction with international marketing and planning executives were easier.

After writing several conceptual and empirical articles related to international marketing strategy, Sam Craig and I decided again to try our hands at a book—this time titled *Global Marketing Strategy* (Douglas and Craig 1995). In it, we aimed to interweave some of the underlying concepts from international business with those from marketing strategy (most notably from Day [1990] and Aaker [1998]). The book was based on a three-phase strategy model we developed, which identifies three phases in the evolution of firms in international markets: (1) initial entry, (2) local market expansion, and (3) global rationalization. Each phase is characterized by a key strategic thrust that provides a framework for understanding the challenges and decision priorities a firm faces as it expands and gains experience in international markets.

Today, advances in communications technology and the growth of the Internet are radically changing existing business models and established ways of doing business in international markets. Firms can instantly "go global," targeting a specific market segment worldwide, or reach customers by building a network of Internet sites in different languages throughout the world. So it seems there is now a need to revisit traditional approaches and formulate a new framework for doing business not only in international markets but also in cyberspace and at cyberspeed.

Indeed, the rapid pace of change is so formidable that it seems almost impossible to keep up with what is happening in a single industry, let alone in markets around the world. At times I believe the task is almost too daunting. Then I revisit the characters in the books I read as a child—the Red Queen crying, "Faster, faster"; the White Knight continually falling off his horse, only to get back on again immediately; the grinning Cheshire Cat appearing and vanishing at will; or the Caterpillar dispensing sage advice while smoking a hookah. I take comfort in the thought that these characters also understood the challenges of survival in an increasingly fast-paced, competitive, and unpredictable world.

Some Final Thoughts

In coming to the end of this essay, I realize that there are few marketing references. This is perhaps because in exploring global markets and in seeking to understand the attitudes and behavior of other cultures and countries, I have found it most useful to follow the paths of other explorers. Writers of many different backgrounds and perspectives—philosophers, sociologists, social psychologists, anthropologists, and political scientists—have tried to understand the different ways of thinking and behaving of other cultures and countries. From their varied perspectives I have gained the richest insights. All have faced the same challenges of uncharted paths, of confronting new and unfamiliar ways of thinking and behaving, which has led them to question and broaden the limits of their own understanding.

In retrospect, I think that for me the challenges of working in the area of international marketing have always been greater than those of being a woman in the world of business. Not only are the issues complex and difficult to master, but also its contribution is not well recognized nor understood in academic circles. Jerry Wind remarked once that international marketing was the stepchild of marketing (Wind 1980). Unfortunately, I fear that this perspective still holds among many academics, despite the almost dizzying pace at which the globalization of business is occurring.

This is unfortunate because, as my first mentor in marketing, Reavis Cox (1965b, p. 162), so wisely remarked more than 30 years ago, "Paradoxical though it may seem, what we stand to gain most from studying other marketing systems, is not so much what they tell us about others but what they force us to learn about ourselves in order to understand what we see abroad."

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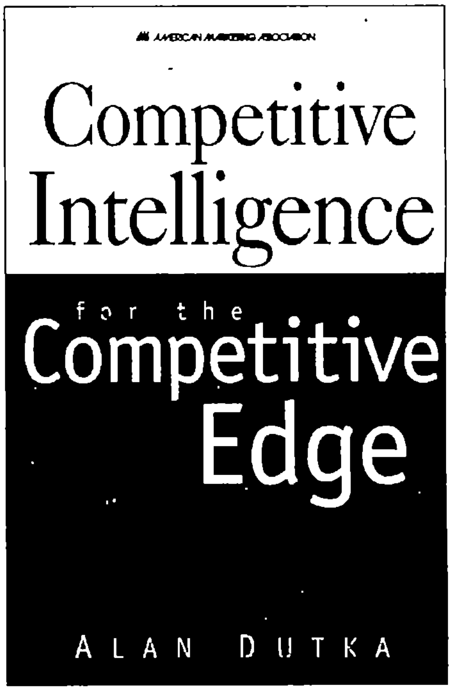

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Aric Rindfleisch & Christine Moorman

The Acquisition and Utilization of Information in New Product Alliances: A Strength-of-Ties Perspective

In this article, the authors examine the acquisition and utilization of information in new product alliances. Drawing from research in social network theory with a focus on the strength-of-ties literature, the authors suggest that horizontal alliances have lower levels of relational embeddedness and higher levels of knowledge redundancy than vertical alliances. The authors then suggest that though embeddedness enhances both the acquisition and utilization of information in alliances, redundancy diminishes information acquisition but enhances information utilization. The authors test these ideas using a sample of 106 U.S. firms that recently have participated in new product alliances. Although the results are broadly supportive of the predictions, they are also surprising because they question key underlying assumptions of the strength-of-ties literature. For example, closely tied individual actors are typically assumed to share both high levels of embeddedness and high levels of redundancy, but the present research finds that this assumption does not hold for organizational actors. The authors discuss the implications of these findings specifically for new product alliances and for research on tie strength among organizations in general.

Perhaps the most fundamental area of research activity in the field of marketing involves the nature, antecedents, and consequences of various forms of exchange relationships (Bagozzi 1975; Dwyer, Schurr, and Oh 1987; Webster 1992). In the domain of interorganizational relations, this exchange-based paradigm has informed inquiries into the relations between buyers and suppliers (e.g., Frazier, Spekman, and O'Neal 1988; Lusch and Brown 1996), service providers and clients (e.g., Heide and John 1988; Moorman, Zaltman, and Deshpandé 1992), and manufacturers and distributors or sales agents (e.g., Anderson and Weitz 1989; Anderson and Narus 1990).

Despite this wealth of interorganizational research, several aspects of interfirm relations have eluded inquiry. First, although marketing scholars acknowledge that the nature of interorganizational relations may be substantially different among firms that are competitors rather than channel members (e.g., Achrol 1997), the bulk of marketing's interorganizational relationship literature focuses on vertically related firms. As recently noted by Sheth and Sisodia (1999, p. 84), "we have good theories on vertical integration but not on horizontal integration or alliances." Likewise, Robertson and Gatignon (1998, p. 529) suggest that "It might be particularly useful to separate horizontal alliances (between competitors) vs. vertical alliances of firms operating at adjacent stages of the value chain." Second, although increasing numbers of firms are developing new products within a web of interorganizational exchange relationships (Millson, Raj, and Wilemon 1996), the marketing literature has little research on interorganizational new product development activity (for exceptions, see Kotabe and Swan 1995; Robertson and Gatignon 1998; Sivadas and Dwyer 2000). Therefore, Wind and Mahajan (1997, p. 7) identify new product alliances as an important research issue that represents the forefront of "the changing dynamics of competition and cooperation."

In this article, we seek to enhance marketing's understanding of these issues by examining interorganizational relations in new product development. These relationships, which we term *new product alliances*, are defined as formalized collaborative arrangements among two or more organizations to jointly acquire and utilize information and know-how related to the research and development (R&D) of new product (or process) innovations (adapted from Link and Bauer 1989, p. 5). Because of the rising costs of R&D, increased global competition, and a need for standardization, growing numbers of firms are conducting new product activities through such alliances. However, as noted by several scholars (e.g., Rosenfeld 1996; Wang 1994), the out-

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comes of these alliances are largely unknown. Managers, for example, have expressed great concern about their firms' ability to acquire information from fellow alliance participants as well as their ability to use this information to enhance new product–related outcomes (Mowery 1998; Sivadas and Dwyer 2000).

At least part of the uncertainty surrounding these alliances may arise because the structural and motivational aspects of cooperation among competitors appear to be quite different from those found in traditional vertical channel-based relationships (Galaskiewicz 1985). To understand these differences, we draw on concepts and findings from social network theory with a focus on the strength-of-ties literature. This perspective, which has been applied to several recent interorganizational studies (e.g., Achrol and Kotler 1999; Gulati 1998; Hansen 1999; McEvily and Zaheer 1999), conceptualizes information flows among social actors as heavily dependent on both their social structure (e.g., Burt 1992; Granovetter 1973, 1982) and their motivation to engage in information exchange (e.g., Brown and Reingen 1987; Frenzen and Nakamoto 1993; Uzzi 1999). Given that know-how transfer is widely cited as the major objective behind alliance participation (Macdonald 1995; Rosenfeld 1996; Watkins 1991) in specific and new product development in general (Moorman 1995; Moorman and Miner 1997), a tie-strength perspective is appropriate for the study of new product alliances.

We suggest that compared with vertical interorganizational relationships (i.e., channel members), firms in horizontal relationships (i.e., competitors) may be faced with the double jeopardy of trying to acquire information from participants that have little complementary knowledge and lack the motivation to share this knowledge (because of common structural linkages and access to similar types of information). This combination of structural and motivational features is dramatically different from the characteristics of the interindividual networks typical of most strength-of-ties research.

In contrast to these information acquisition deficiencies, we posit that horizontal alliances may realize information utilization benefits, as redundancy in the form of similar product development knowledge and skills enhances the ability of weakly tied social actors (i.e., competitors) to develop creative new products and launch them quickly. Although conceptualizations of the strength of weak ties among individuals (e.g., Granovetter 1973) assume that weak ties are advantageous because a low degree of redundancy enhances information acquisition, we suggest that in an interorganizational context, weak ties may be advantageous because a high degree of redundancy enhances information utilization. Thus, our research uncovers hidden aspects of the strength of weak ties that have not been articulated by network scholars.

The Strength-of-Ties Literature: A Brief Review

The strength-of-ties literature is primarily concerned with the nature of the relational bond between two or more social actors, as well as the effect of this bond on their information sharing activities (e.g., Frenzen and Nakamoto 1993; Granovetter 1973, 1982; Hansen 1999; Uzzi 1999). Tie-strength researchers typically classify the relation between social actors as being linked by either a strong tie or a weak one. Strong ties are viewed as having higher levels of closeness, reciprocity, and indebtedness than weak ties (Granovetter 1973; Marsden and Campbell 1984). Although there is considerable debate about the relative advantages of these two different types of ties, it is widely accepted that strong ties increase the likelihood that social actors will share sensitive information with each other, whereas weak ties provide access to a greater amount and diversity of information (Frenzen and Nakamoto 1993; Hansen 1999).

The notion that tie strength could be used gainfully to understand information flows among social actors was first advanced by Granovetter (1973), who demonstrates the power of weak ties in information diffusion. In this classic study, Granovetter shows that information about employment opportunities was more likely to be obtained from acquaintances (i.e., weak ties) than family members (i.e., strong ties). Since then, tie strength has been applied to a variety of information-sharing contexts, ranging from word-of-mouth behavior among consumers (Brown and Reingen 1987) to information transmission among medical professionals (Burt 1987). Although tie strength typically has been applied to relationships among individuals, a growing body of researchers has applied tie-strength concepts to understand information flows in both organizational (e.g., Hansen 1999; Krackhardt 1992) and interorganizational settings (e.g., McEvily and Zaheer 1999; Uzzi 1999).

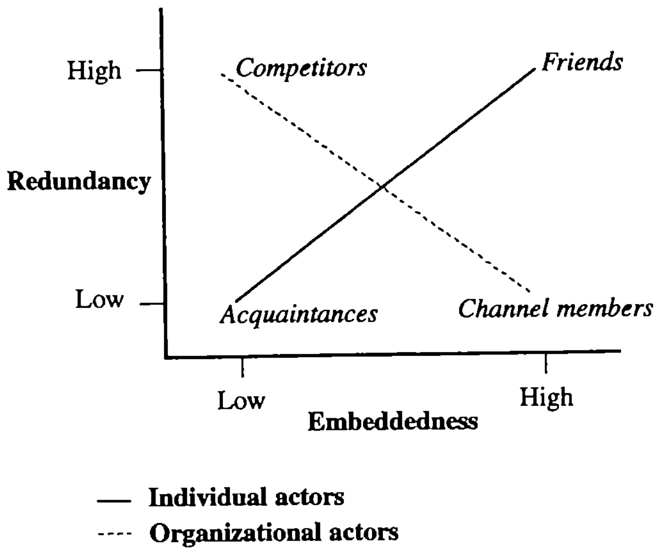
Concurrent with this shift in focus, researchers have also begun to reexamine the basic concept of tie strength itself. According to Granovetter's (1973) original conceptualization, strong ties are distinct from weak ties in terms of both structure and motivation. Specifically, Granovetter views strong ties as social networks that are structured by a high degree of redundant information and motivated by a high degree of emotional closeness and reciprocity. This conceptualization has been broadly shared by other tie-strength researchers as well. For example, using a bridge metaphor, Frenzen and Nakamoto (1993, p. 373) suggest that there is a "structural tendency for strong ties to cluster in dense, island-like cliques and weak ties to scatter widely as nonredundant bridges that link cliques together."

Growing numbers of researchers have begun to question the validity of this traditional view of tie strength (e.g., Hansen 1999; McEvily and Zaheer 1999; Reingen 1994). For example, recent research suggests that in an alliance context, strong ties may provide access to nonredundant information (Achrol and Kotler 1999; McEvily and Zaheer 1999). These findings are consistent with those reviewed by Reingen (1994, p. 154), who notes that "the little empirical research that directly relates to this issue suggests a surprising lack of redundancy among people in strong-tie relations." One reason for this growing debate over the role of tie-strength may be that researchers do not share a common conceptualization of strong ties (see Krackhardt 1992).

This growing debate regarding the conceptualization and components of tie-strength is an outcome of applications of tie-strength concepts to situations characterized by social actors in complex role relations. Much of the early research that emerged from Granovetter's (1973) original conceptualization of the strength of ties deals with information exchange activity among individual actors. This early literature assumed that social actors occupy a singular role (e.g., close friend or casual acquaintance); therefore, tie strength could be viewed as a broader concept, consisting of both high levels of embedded relations and high levels of redundant knowledge (i.e., close friends display both of these qualities). Although this broader view may be suitable for interindividual relations, it may be an oversimplification of interorganizational relations, in which firms may simultaneously hold multiple roles (e.g., competitor and collaborator) and therefore may display more complex structural and motivational features. Thus, studies of information-sharing activity within interorganizational relationships have a greater need to distinguish among the dimensions of tie strength. Following previous research, we focus on two key tie-strength dimensions: (1) relational embeddedness (Gulati 1998; Uzzi 1999) as an indicant of the motivational aspect of tie strength and (2) knowledge redundancy (Burt 1987, 1992) as an indicant of the structural aspect of tie strength. We define and explain both of these constructs in the following section.

Considering the nature of the roles played by competitors in an alliance setting, we suggest that horizontal alliances are characterized by a low degree of relational embeddedness and a high degree of knowledge redundancy. Conversely, we suggest that vertical alliances are characterized by a high degree of relational embeddedness and a low degree of knowledge redundancy. This idea is based on previous research, which reveals that compared with channel members, competitors are characterized by higher levels of conflicting goals (Park and Russo 1996) and greater access to similar types of information (Powell, Koput, and Smith-Doerr 1996). Thus, as is shown in Figure 1 (and developed in our hypotheses), the relationship between embeddedness and redundancy among interorganizational actors appears to be the inverse of the relationship found for individual actors. In the next section, we examine these alliance characteristics (i.e., embeddedness and redundancy) in greater detail and offer a set of hypotheses about their relationship to new product alliance activity.

FIGURE 1
Relationship Between Relational Embeddedness and Knowledge Redundancy Among Individual Actors Versus Organizational Actors



Hypothesized Relationships

Tie Strength and Alliance Composition

Relational embeddedness. We define relational embeddedness as the degree of reciprocity and closeness among new product alliance participants. This conceptualization is derived from recent work that observes that interorganizational networks are linked by both structural and relational embeddedness (e.g., Granovetter 1992; Gulati 1998; Uzzi 1999). To date, most studies in the tie-strength literature focus on the structural embeddedness between actors by examining the position of a given organization in a broader network structure (see Gulati 1998). However, in a growing number of recent studies, researchers have begun to explore the impact of relational embeddedness on interorganizational outcomes through examinations of interorganizational reciprocal helping relations (Hansen 1999), cohesive ties (Gulati 1998), and reciprocal obligations (Uzzi 1999). These studies suggest that alliances characterized by a high degree of relational embeddedness display high levels of cooperation (Gulati 1998).

McEvily and Zaheer (1999) suggest that relational embeddedness should be higher among channel members than competitors, as channel members are more likely to have a vested interest in the success of their partners. The prospect of direct competition, in contrast, lowers a firm's incentive to engage in cooperative information-sharing activity and increases the incentive for hoarding valuable information (Achrol 1997; Vonortas 1997). This idea is indirectly supported by recent research by Park and Russo (1996), who find that joint ventures between competitors are more likely to fail than joint ventures between partners that do not compete. They suggest that this higher rate of failure is due to the competitors being more likely to face conflicting goals and objectives. On the basis of this research, we predict the following:

> H_1: Vertical new product alliances will have higher levels of relational embeddedness than horizontal new product alliances.

Knowledge redundancy. Whereas relational embeddedness focuses on the quality of the relationship between social actors, redundancy is broadly viewed as the degree of overlap in the knowledge base between two or more social actors (Burt 1992; Krackhardt 1992). Overlapping knowledge is the product of social actors sharing equivalent structural positions in which they are exposed to similar types of information. Given our focus on the domain of new product development, we define knowledge redundancy as the degree of similarity in the new product–related information, capabilities, and skills among new product alliance participants.

The strength-of-ties literature indicates that knowledge redundancy is typically higher among actors that occupy similar social positions (Burt 1987; Granovetter 1973).

Extending this literature, we suggest that competitors are likely to occupy similar positions within a larger social structure and share similar patterns of relations to other social actors (i.e., customers and suppliers). As Galaskiewicz (1985, p. 287) notes, "Firms that are horizontally interdependent compete with each other in obtaining similar resources and disposing of similar goods and services. One could argue that these organizations are structurally equivalent." This assertion is supported by a broad base of literature that suggests that in many industries, horizontally related firms have access to similar types of information because of common structural linkages through trade associations (Vives 1990), industry-based norms and procedures (Thomas and Soldow 1988), networks of informal know-how trading (von Hippel 1987), and membership in a common technological community (Powell, Koput, and Smith-Doerr 1996). Not all horizontally related firms share high levels of redundant knowledge. However, because of their high degree of structural equivalence, alliances composed predominantly of competitors should possess more redundant knowledge than alliances composed mainly of channel members. Thus, we predict the following:

> H_2: Horizontal new product alliances will have higher levels of knowledge redundancy than vertical new product alliances.

Relational Embeddedness, Knowledge Redundancy, and Information Acquisition

We view information acquisition as the quantity of information related to new product development acquired from other new product alliance participants. Specifically, our focus is the acquisition of technical information directly relevant to new product development, because other types of information (e.g., consumer or market information) fall outside the boundaries of most new product alliances (Hemphill 1997; Wright 1986).

Relational embeddedness. According to strength-of-ties researchers, information sharing among social actors is facilitated by a high degree of relational embeddedness in their social network (Granovetter 1973). As an example of the effects of a high degree of embeddedness, Frenzen and Nakamoto (1993) find that consumers are more likely to transmit information about a sale to a close friend than to a casual acquaintance (see also Brown and Reingen 1987). More recently, Hansen (1999) finds that frequent contact and emotional closeness among internal product development team members enhance the amount of complex knowledge transferred among team members. Finally, Krackhardt (1992) argues that in an organizational domain, information exchange is highly dependent on the degree of emotional closeness among social actors. On the basis of this research, we expect the following:

> H_3: Relational embeddedness will be positively related to information acquisition in new product alliances.

Knowledge redundancy. In addition to the benefits of embedded ties, strength-of-tie researchers also find that information sharing is enhanced by a low degree of redundancy among social actors' knowledge structures. As an example of the effects of knowledge redundancy, Uzzi (1999) finds that within the banking industry, a firm's access to information about loan opportunities and market prices is facilitated by having a network of loosely connected, nonredundant, arm's-length ties to small business lenders. This finding supports both Granovetter's (1973) conceptualization of the "strength-of-weak ties" and Burt's (1992) conceptualization of "structural holes," which posits that information is more likely to flow among social actors that have different sets of contacts. These differential contacts lead to lower levels of knowledge redundancy and are more likely to provide access to novel information (Hansen 1999). Thus, we propose the following:

> H_4: Knowledge redundancy will be negatively related to information acquisition in new product alliances.

Relational Embeddedness, Knowledge Redundancy, and Information Utilization

Although strength-of-ties research has largely focused on the influence of tie strength on information acquisition (e.g., Burt 1987; Granovetter 1973; Uzzi 1996), a few studies have explored the effects of tie strength on higher-level information activities (e.g., Debackere, Clarysse, and Rappa 1996; Duysters, Kok, and Vaandrager 1999; McEvily and Zaheer 1999). We follow and extend these prior studies by employing our disaggregated view of tie strength to examine the independent effects of relational embeddedness and knowledge redundancy on information utilization in new product alliances. As McEvily and Zaheer (1999) note, information acquisition is not a discrete event but rather a part of a multistage process that includes the eventual utilization of this information to achieve organizational objectives.

The marketing literature has identified various types of information use activities (e.g., Kohli and Jaworski 1990; Moorman 1995; Slater and Narver 1995). For example, in their seminal research on market orientation, Kohli and Jaworski (1990) identify two components of organizational information utilization: response design (i.e., the use of information in developing plans) and response implementation (i.e., the speed with which plans are executed). Following this literature, we focus on the creativity and speed of development activities as two indicators of information utilization in new product alliances. We define new product (or process) creativity as the degree to which a firm utilizes new product alliance information to develop output that is novel to the industry and challenges existing standards (adapted from Moorman 1995). We define new product development speed as a firm's efficient utilization of new product alliance information in moving from conceptualization to the market introduction of a new product (adapted from Griffin 1993b).

Relational embeddedness. In addition to its positive effect on information acquisition, recent strength-of-ties research suggests that relational embeddedness should also enhance information utilization. For example, Uzzi (1999) finds that firms with embedded ties to their lending institutions are able to achieve lower financing costs than firms that share more arm's-length ties with their lending institutions. He suggests that this occurs because the lender can use information about the firm to create innovative and low-cost loans. In a new product development context, Hansen

(1999) finds that weak ties (i.e., a lack of relational embeddedness) among new product development team members may lengthen project completion time because they impede the transfer of complex knowledge among team members. In effect, embedded relations appear to enable product development activities to proceed more efficiently by lowering concerns about the loss of proprietary skills and knowledge and diminishing the likelihood of conflict over goals and implementation.

The notion that higher levels of relational embeddedness facilitate the utilization of information has also been noted by interorganizational relationship researchers. For example, Sabel (1993) documents how the development of embedded relations (what he terms "studied trust") among industrial firms in Pennsylvania provides benefits in the form of improved training and technological processes. Also, Moorman, Zaltman, and Deshpandé (1992) find that embedded relations (in the form of organizational trust) between market research providers and their clients indirectly enhances the utilization of market research information by improving the quality of the relationship between exchange partners. In a recent extension and replication of Moorman, Zaltman, and Deshpandé (1992), Grayson and Ambler (1999) find that trust is positively related to a marketing manager's utilization of information provided by an advertising agency representative. In summary, relational embeddedness appears to enhance information utilization in terms of both new product/process creativity (Uzzi 1999) and new product development speed (Hansen 1999). Thus, we suggest the following:

> H_5: Relational embeddedness will be positively related to information utilization in new product alliances in the form of (a) new product creativity, (b) new process creativity, and (c) new product development speed.

Knowledge redundancy. In contrast to its negative effect on information acquisition, recent evidence from the tie-strength literature indicates that knowledge redundancy may improve information utilization. For example, Debackere, Clarysse, and Rappa (1996) find that biotechnology firms improve their innovative output by forming strong network ties to other firms in their industry (i.e., higher levels of redundant ties). Conversely, Kotabe and Swan (1995) find that firms that form strategic alliances with organizations outside their industry (i.e., low redundancy) introduce products that are significantly more innovative than firms that form ventures with organizations within their industry (i.e., high redundancy).

Thus, the effects of redundancy on creativity appear somewhat mixed. However, previous studies that focus on the negative influence of horizontal collaboration on innovative activity have not fully accounted for the fact that innovation in horizontal alliances is likely to be diminished by competitors' low degrees of relational embeddedness (see Figure 1). We believe that when the effects of relational embeddedness are removed, knowledge redundancy should have a positive effect on information utilization.

Building on research by both marketing and organizational scholars, we suggest that redundant knowledge enhances innovation by providing a shared base of tacit understanding, similar organizational routines, and common beliefs that serve as building blocks for innovation (Dougherty 1992; Hutt, Reingen, and Rochetto 1988). As Powell and Brantley (1992, p. 368) note, "Typically, innovation builds on existing know-how." The conception of innovation as a process of building from existing stores of knowledge and expertise underlies Cohen and Levinthal's (1990) well-known concept of absorptive capacity, which suggests that existing knowledge structures enhance a firm's ability to use new information. More recently, Madhavan and Grover (1998) note that information redundancy enhances innovation by capitalizing on the absorptive capacity of organizational actors. Likewise, Hutt, Reingen, and Rochetto (1988) find that shared knowledge structures increase an organization's level of creative new product initiatives.

Collectively, this literature suggests that knowledge redundancy in the form of similar new product development capabilities will have a positive effect on information utilization in the form of new product/process creativity. At times, however, alliance members may engage in innovation that fails to build on existing competencies. For example, "competency-destroying innovations" (see Tushman and Anderson 1986) may require firms to develop new skills and capabilities. In these cases, firms may intentionally seek out alliance partners that possess nonredundant knowledge structures. However, these conditions do not necessarily negate the importance of shared knowledge structures and common skills. Indeed, shared knowledge structures are likely to provide a basis for effective communications and actions even in these more uncertain environments. For example, the innovative benefits of shared knowledge structures is demonstrated in research that shows that radical innovation is effectively diffused through know-how exchange among industry competitors (Allen 1983).

In addition to its positive effect on new product/process creativity, we suggest that redundancy should also enhance information utilization in the form of new product development speed. Specifically, we believe that the presence of shared knowledge structures and similar capabilities has a positive effect on a firm's ability to absorb, incorporate, and transform acquired knowledge into new products or processes in a timely manner. Although the strength-of-ties literature is largely silent on the effects of redundancy on speed of action, new product development researchers broadly suggest that the presence of shared knowledge and similar capabilities should enhance the speed of new product development because this redundancy lowers the need for planning and coordination among new product alliance members.

Although planning is an essential component of the new product development process, it tends to have a negative relationship with the speed of product introduction (Dickson 1992; Stalk 1988). According to McDonough and Barczak (1991), technological familiarity facilitates the speed of product development by easing decision making and reducing the dangers of the "not invented here" syndrome. Likewise, Griffin (1993a, p. 9) notes that diversity of technical expertise is negatively related to speed of new product development and observes that "As the number of different technical inputs to projects increases, stronger coordination across groups is required." Thus, a high degree of redundancy among alliance participants should enable firms to spend less time planning and coordinating their activities and thus be better able to introduce new products quickly. In summary, we predict the following:

H_6: Knowledge redundancy will be positively related to information utilization in new product alliances in the form of (a) new product creativity, (b) new process creativity, and (c) new product development speed.

Method

Sample and Procedure

The sampling frame for this study is U.S. firms that have recently participated in new product alliances. Historically, new product alliances among U.S. companies have been limited by a federal antitrust policy that has been described as largely "hostile toward R&D collaboration among industrial firms" (Mowery 1998, p. 38). However, starting in the mid-1980s, new product alliances blossomed following the passage of the National Cooperative Research Act (NCRA) of 1984. One of the principal intents of the NCRA was to increase information sharing and cooperative R&D activity among industry rivals by decreasing the threat of antitrust prosecution (U.S. House 1984). Although the NCRA was primarily focused on enhancing cooperation among competitors, this act has also fostered several alliances among channel members.

In accordance with the NCRA, new product alliance participants may file written notification of their alliance with the U.S. Attorney General to minimize the threat of antitrust prosecution. These filings are published in the *Federal Register* and provide information about the formation date, identity and location of the parties, and basic purpose of each alliance. Although new to marketing, *Federal Register* filings have served as the sampling frame for several studies of new product alliances (e.g., Aldrich and Sasaki 1995; Bolton 1993; Link 1996; Scott 1988; Vonortas 1997). We examined all the alliances filed in the *Federal Register* from January 1, 1989, to March 15, 1995.

During this time period, 242 new product alliances were filed in the *Federal Register*. After omitting alliances that either were deemed too large for respondents to evaluate (i.e., more than 12 participants) or consisted solely of firms that were already included in a prior alliance, we had a sample of 153 alliances, which represent the relevant population for our sampling frame. Within each alliance, we identified between one and six firms for inclusion in our sample. If an alliance had six or fewer participants, we included all members in our sampling frame. For alliances containing more than six participants, we used a random selection procedure. Because prior research suggests that international alliances may be systematically different from domestic alliances (e.g., Harrigan 1985; Kogut and Singh 1988), we included only firms that were either U.S. companies or domestic divisions of multinational corporations. To maximize the diversity of organizations included in this study, firms that belonged to multiple alliances were sampled only once. These procedures resulted in 380 firms for inclusion in our study.

The next stage of the sampling procedure involved finding the name of a key informant. As detailed by Campbell (1955), the key informant approach enables researchers to obtain information about a group (i.e., a firm) by collecting data from selected people within that group who are highly knowledgeable about the phenomena under study. The key informant approach has been successfully employed in several studies of interorganizational relationships (e.g., Lusch and Brown 1996; Morgan and Hunt 1994; Stump and Heide 1996). As in other studies in this domain (e.g., Bolton 1993; Link and Bauer 1989; Robertson and Gatignon 1998), our targeted key informants were vice presidents of R&D within each firm. Vice presidents of R&D are ideal respondents because of their high levels of knowledge about the firm, its strategic environment, and its new product alliances (Link and Bauer 1989).

Before mailing questionnaires, we attempted to precontact each key informant by telephone to (1) assess the informant's ability to serve as a key informant by asking if he or she was knowledgeable about the alliance in question, (2) obtain cooperation, and (3) verify the informant's mailing address. In the majority of cases, we talked directly with a key informant. This process eliminated 39 firms (across six alliances) in which we could not reach or identify a knowledgeable executive. Therefore, the population for our final sampling frame consisted of 341 (380 – 39) firms. Each informant was mailed a cover letter, a one-page summary description of their new product alliance, a survey, and a postage-paid reply envelope. As an incentive to participate, informants were told they would be provided with a customized summary report of the study results. Three weeks after this initial mailing, we telephoned nonrespondents, and we sent a handwritten postcard one week later. Informants who did not reply within six weeks were mailed a second set of survey materials.

The surveys for eight firms were returned as undeliverable, and another 33 firms replied that they were willing to participate in this study but did not have enough knowledge about their alliance to provide useful information. This left an effective sampling frame of 300 firms (across 147 alliances), of which 106 usable surveys were returned, for a 35% response rate. These 106 surveys represent 70 different alliances (for a 48% response rate at the alliance level). This sample size and response rate compare favorably with similar studies of this population (e.g., Bolton 1993; Chen 1997; Littler, Leverick, and Bruce 1995; Sivadas and Dwyer 2000). As Armstrong and Overton (1977) recommend, potential nonresponse bias was assessed through an extrapolation method of comparing early with late respondents. No significant differences in either mean scores or variances were found for any key constructs between early (i.e., before second mailing) and late (i.e., after second mailing) respondents. Only 12 (11%) of our responses were from firms involved in two-party alliances, and the average respondent was involved in an alliance with 5.4 other participants. Thus, these responses capture the multifirm aspect of new product alliance activity.

As a validity check, respondents provided information regarding their position, the number of years they had worked for their firm, and their level of familiarity with the alliance in question. Results indicate that the sampling approach was quite successful in identifying key informants. Respondents were highly knowledgeable about their firm's involvement in the new product alliance (5.8 on a seven-point scale) and had worked for their firm for an average of 14.8 years. Two-thirds (66%) were presidents or vice presidents of their firm.

Measurement

Measure development began with field interviews and an early pretest version of the survey among product development personnel at IBM. These early interviews helped develop the measurement scales and were instrumental in crafting a pretest survey that was mailed to key informants in 50 firms (of which 23 responded) who had participated in new product alliances from March 16, 1995, to October 31, 1996. Respondents were asked for their suggestions for improving the survey instrument. All the scales used in the pretest were examined for internal consistency, unidimensionality, and content validity. This analysis revealed that the survey instrument was generally sound; however, a few items appeared in need of modification and were revised. The final survey contained measures of the key constructs and a set of control variables. The items in these key measures are detailed in the Appendix and the intercorrelations, reliability, and descriptive statistics are provided in Table 1.

Alliance composition. We consider alliance composition to be the nature of the relationship among alliance participants. To capture this relationship, we listed the names of all organizations participating in the alliance and asked respondents to classify each collaborator as a customer, a supplier, a competitor, or other (adapted from Littler, Leverick, and Bruce 1995). On the basis of these classifications, we calculated the percentage of competitors in each alliance as an indicant of the degree of horizontal collaboration. The mean percentage of alliance participants classified as competitors by each respondent was 37%. In terms of the distribution of our sample, 35.8% of responses were from alliances composed solely of channel members, 24.5% of the responses were from alliances in which 1%–49% of the participants were competitors, and 39.6% of the responses were from alliances in which 50%–100% of the participants were competitors. This distribution is consistent with the composition of alliances found in prior studies in this domain (e.g., Robertson and Gatignon 1998; Vonortas 1997) and provides a wide array of alliance types in which to examine our conceptual framework.

Relational embeddedness. In the extant strength-of-ties literature, embeddedness typically is derived by an estimation of the frequency of contact (typically using a single item) between social actors (see Granovetter 1982; Krackhardt 1992). However, as noted by Frenzen and Nakamoto (1993, p. 369, italics in original), "frequency of contact reflects the *opportunity* rather than the motivation to transmit." Recognizing the limitations of this type of revealed measures of embeddedness, both Krackhardt (1992) and McEvily and Zaheer (1999) call for measures that capture social actors' motivation to engage in information exchange. We sought to answer these calls by obtaining a direct assessment of relational embeddedness through a multi-item measure of its underlying components.

Using related work in the relational exchange literature as a guide (e.g., Dwyer, Schurr, and Oh 1987; Heide and John 1988; Lusch and Brown 1996), we view embedded ties as evolving in a temporal fashion, in which both prior dealings and anticipated future interactions exert an influence on the pattern of relations among organizational actors. In addition, our measure taps the degree of reciprocal services and mutual closeness among social actors, because prior research suggests that these two constructs are the best indicants of embedded ties (e.g., Marsden and Campbell 1984; Mathews et al. 1998). Therefore, we developed a four-item, Likert-type scale that asked respondents to assess their firms' degree of reciprocity and closeness with fellow alliance participants. This measure demonstrates acceptable reliability ($\alpha = .76$).

Knowledge redundancy. Network researchers typically assess redundancy by examining the degree of overlap in the network contacts of social actors (e.g., Burt 1987, 1992). Although this measure is rich in analytical properties, it provides only an indirect assessment of shared knowledge and skills. Therefore, we decided to assess knowledge redundancy more directly by developing a four-item semantic differential scale that asked respondents to evaluate the degree of similarity in new product development skills, knowledge, and resources of one of their fellow alliance participants (selected at random by the researchers). We adopted this single-firm approach because we believed that respondents would have difficulty responding to a more global (i.e., alliance-level) measure of knowledge redundancy.

In the vast majority of cases (91%), firms for which competitors accounted for half or more of their fellow participants evaluated competitors, and firms for which channel members accounted for the majority of their fellow participants evaluated channel members. In addition, there is no significant difference in the mean level of redundancy reported for two-party alliances (3.52) versus multiparty alliances (3.65). Therefore, although our measure only assesses a firm's degree of redundancy with a single alliance participant, we believe that this measure is indicative of the degree of redundancy among alliance participants in general. Our knowledge redundancy scale was developed on the basis of the descriptions of capability similarity discussed in the writings of Best (1990), Richardson (1972), and Teece (1992) and is similar to the measure of technological linkage employed by Olk (1997). This measure displays good reliability ($\alpha = .85$).

Amount of new product–related information acquired. Drawing on research in both cognitive and organization science (Anderson 1983; Kogut and Zander 1992), we investigate two different forms of new product–related information. First, we examine product-related information, such as a product's underlying components, features, and specifications. Second, because new product alliance activity often involves process innovation, we also examine process-related information, which is the techniques and procedures used to develop new products. We measured the amount of new product–related information acquired using a new ten-item, seven-point Likert-type scale that asked informants to rate the amount of new product–related information their firm acquired from fellow alliance participants. Our measure contained five items that assess product information (i.e., facts and findings) and five items that assess process information (i.e., techniques and tasks). Each of these two forms of information acquisition demonstrates a high degree of internal consistency (product information acquisition $\alpha = .89$, process information acquisition $\alpha = .92$).

TABLE 1
Key Measure Statistics

Measure	Mean	Standard Deviation	a	b	c	d	e	f	g	h	i	j	k	l	m	n
a. Alliance composition	.37	.37	(n.a.)													
b. Relational embeddedness	4.16	1.22	–.21	(.76)												
c. Knowledge redundancy	3.63	1.66	.48	–.06	(.85)											
d. Product information acquisition	3.45	1.44	–.43	.47	–.28	(.89)										
e. Process information acquisition	2.98	1.41	–.27	.33	–.22	.66	(.92)									
f. New product creativity	5.29	1.30	–.36	.29	–.08	.38	.26	(.96)								
g. New process creativity	4.81	1.38	–.12	.10	.02	.31	.33	.65	(.96)							
h. Product development speed	4.01	1.03	.19	.38	.24	.23	.29	.12	.27	(.81)						
i. Number of firms	6.42	2.68	.34	–.02	.18	–.26	–.10	–.37	–.07	.13	(n.a.)					
j. Relationship history	2.67	1.50	–.20	.36	–.08	.30	.16	.14	.03	.20	–.21	(n.a.)				
k. Stage of development	4.83	1.30	–.09	.01	–.01	.13	.00	.34	.35	.11	–.26	.17	(.77)			
l. Skill-based objectives	5.28	1.31	–.42	.14	–.29	.36	.21	.49	.42	.17	–.16	.06	.35	(.72)		
m. Cost-based objectives	5.16	1.41	.10	.18	.11	.03	.07	.15	.15	.26	.01	.05	.14	.32	(.71)	
n. Alliance scope	1.74	.44	–.02	–.09	–.10	–.06	.04	–.09	–.10	–.14	.04	–.08	–.11	–.01	–.08	(n.a.)

Notes: The coefficient alpha for each measure is on the diagonal, and the intercorrelations among the measures are on the off-diagonal. Correlations ≥±.19 are significantly different from zero at $p \le .05$; correlations ≥±.25 are significantly different from zero at $p \le .01$. n.a. = not applicable.

New product/process creativity. Our measure of new product/process creativity is adapted from Moorman's (1995) new product creativity scale. Because firms can develop innovation in both products and processes, our measure consisted of two separate scales: (1) an assessment of the degree of creativity of the product itself and (2) the degree of creativity in the processes designed to manufacture the product. Each of these two measures employed seven items with a seven-point Likert-type scale. Both new product and new process creativity demonstrate a high degree of reliability, as each had an alpha of .96.

New product development speed. To measure product development speed, we used a five-item, seven-point semantic differential scale. Scale items asked informants to rate the speed of development associated with the new products generated from their alliance participation. These items focus on how fast the firm has been able to develop new products or processes compared with the firm's norms and expectations. This measure, which borrows from the work of Griffin (1993a, b) and McDonough and Barczak (1991), displays good reliability ($\alpha = .81$).

Control variables. These variables were designed to control for individual firm differences and features of new product alliances that might serve as potential confounds or alternative explanations for our hypotheses about the relationship between tie-strength characteristics and new product outcomes. These control variables fall outside our theoretical focus on tie-strength characteristics but have been shown to influence interfirm cooperation in previous studies that use alternative conceptual foundations.

At the firm level, we control for relationship history between the focal firm and its fellow alliance participants, because a history of prior dealings has been shown to enhance interorganizational cooperation (Morgan and Hunt 1994; Smith and Barclay 1997). To assess the extent to which the focal firm participated in prior alliances with each of the other alliance participants, we used a single item with a seven-point scale ranging from "few relationships" to "many relationships." We then calculated the average score among all alliance partners to form an aggregate measure of relationship history. We also control for the type of objective a firm is trying to accomplish, because prior research suggests that firms enter alliances as a means of either reducing costs or enhancing skills (Hladik 1988; Sakakibara 1997; Vonortas 1997). As a measure of these objectives, we asked informants to rate the importance of four objectives that focus on cost-based goals (such as reducing the costs associated with product development, $\alpha = .71$) and four objectives that focus on skill-based goals (such as keeping abreast of changing technologies, $\alpha = .72$).

In addition to these firm-level variables, we also control for three alliance-level variables. First, because a broad base of research demonstrates that it is easier to achieve coordination in small groups than large ones (Day 1990; Heil and Robertson 1991; Pfeffer and Salancik 1978), we control for the number of firms by counting the number of participants in each alliance as listed in the *Federal Register*. Second, as the level and nature of interfirm interaction is likely to vary depending on the stage of development of alliance projects (Garud 1994; Link and Bauer 1989), we control for the stage of development of product innovation. As a measure of this construct, we asked informants to assess retrospectively the stage of product development at the time of alliance formation using a five-item scale based on the work of Garud (1994), Link and Bauer (1989), and Tushman and Anderson (1986). This measure displayed adequate reliability ($\alpha = .77$). Third, because multiple-project alliances may differ systematically from single-project alliances, we control for alliance scope (i.e., whether the alliance was a short-term, single-project venture or a long-term, multiple-project venture) by having two doctoral students classify each alliance as involving either single or multiple projects on the basis of the statement of alliance objective contained in the *Federal Register*. Interrater agreement level among the coders was 85%, and all discrepancies were resolved through a discussion between the coders and one of the authors.

Measure purification. Our key measures were purified through a process that examined their internal consistency by means of coefficient alpha and their unidimensionality and discriminant validity by means of a series of confirmatory factor analysis models using LISREL 8 (Jöreskog and Sörbom 1993). The sets of measures were selected from theoretically similar subsets, which permitted joint examination of maximally similar latent constructs. These sets consisted of the three types of information utilization (i.e., new product creativity, new process creativity, and product development speed), two types of information acquisition (i.e., product information and process information), and two dimensions of tie strength (i.e., relational embeddedness and knowledge redundancy). As Campbell and Fiske (1959) note, this type of grouping of maximally similar constructs provides a stringent test of discriminant validity.

We also chose this submodel approach because all the observed variables could not be included in a single model without violating the five-to-one ratio of sample size to parameter estimates as recommended by Bentler and Cho (1988). This type of submodel analysis has been employed in several previous studies (e.g., Fisher, Maltz, and Jaworski 1997; Moorman 1995; Moorman and Miner 1997). In general, these submodels have fit indices close to or above recommended levels (information utilization model: $\chi^2_{(149)} = 377$, comparative fit index [CFI] = .89, root mean square residual [RMR] = .07; information acquisition model: $\chi^2_{(34)} = 111$, CFI = .90, RMR = .09; strength-of-ties model: $\chi^2_{(19)} = 14$, CFI = .97, RMR = .03), and each observed variable had significant ($p \leq .01$) factor loadings associated with its theorized latent construct.

To assess the discriminant validity between the latent constructs, we ran each submodel twice; in the first run, we freely estimated the correlation between the latent constructs, and in the second run, we constrained the correlation to unity (Anderson and Gerbing 1988). For the information utilization model (which contained three constructs), we constrained the correlation between product and process creativity. For each of the models investigated, the chi-square values for the unconstrained models were significantly lower than the chi-square values for the constrained models (information utilization model: $\Delta\chi^2_{(1)} = 494, p \leq .0001$; information acquisition model: $\Delta\chi^2_{(1)} = 141$, $p \leq .0001$; strength-of-ties model: $\Delta\chi^2_{(1)} = 130$, $p \leq .0001$), providing evidence of discriminant validity.

Results

Tie Strength and Alliance Composition

We examined the relationship between tie strength and alliance composition by conducting a one-way analysis of variance (ANOVA) (with a Scheffé test of multiple contrasts) in which we specified three conditions of alliance composition (i.e., 0% horizontal, 1%–49% horizontal, 50%–100% horizontal) as the criterion variable. Although we conceptualize and measure alliance composition as a continuous variable (i.e., percentage of participants classified as competitors), we treat alliance composition in a categorical manner for inclusion into an ANOVA format (similar results are obtained when alliance composition is used in a continuous manner in a correlation analysis; see Table 1). As predictor variables, we included relational embeddedness (H_1) and knowledge redundancy (H_2). As hypothesized, we find that relational embeddedness is negatively related to the degree of horizontal alliance composition ($F_{(2, 101)} = 5.0$, $p \leq .01$), as firms in purely vertical alliances have a higher level of embeddedness ($\mu = 4.64$) than firms in alliances dominated by competitors ($\mu = 3.81$). Thus, H_1 is supported. We also find that knowledge redundancy is positively related to the degree of horizontal alliance composition ($F_{(2, 101)} = 13.6$, $p \leq .001$), as firms in alliances dominated by competitors have a higher level of redundancy ($\mu = 4.54$) than both firms in alliances dominated by channel members ($\mu = 3.38$) and firms in purely vertical alliances ($\mu = 2.82$). Thus, H_2 is supported.

The Effects of Embeddedness and Redundancy on Information Acquisition and Information Utilization

We tested the effects of relational embeddedness and knowledge redundancy on information acquisition (H_3 and H_4) and information utilization (H_5 and H_6), through a multivariate general linear regression model (GLM) for purposes of statistical efficiency. Product information acquisition, process information acquisition, product creativity, process creativity, and speed of product development were the dependent variables; relational embeddedness and knowledge redundancy were the predictor variables; and relationship history, number of firms in the alliance, stage of development, skill-based objectives, cost-based objectives, alliance scope, and alliance composition (i.e., percentage of alliance participants classified as competitors) were control variables. We included alliance composition as a control variable to help determine the effects of redundancy and embeddedness independent of their relationship to the composition of a given alliance. In contrast to our previous hypotheses (H_1 and H_2), in this GLM regression analysis, we are interested in the direct effects of tie-strength characteristics (rather than the direct effect of alliance composition) on new product outcomes.

Multivariate tests reveal that both knowledge redundancy (Wilks' Lambda = .62, F = 8.2, $p \leq .0001$) and relational embeddedness (Wilks' Lambda = .76, F = 4.5, $p \leq .001$) are significantly related to our five dependent variables. In addition, both knowledge redundancy ($E^2 = .24$) and relational embeddedness ($E^2 = .36$) have large effect sizes. Among our control variables, only skill-based objectives have a significant multivariate relationship (at $p \leq .05$) to our five dependent variables (Wilks' Lambda = .70, F = 6.1, $p \leq .0001$). Because of these significant multivariate effects for our two key predictor variables, we explored the individual regression models for each of our five dependent variables.

As reported in Table 2, relational embeddedness and knowledge redundancy have differential effects on information acquisition. Specifically, although relational embeddedness is strongly and positively related to the acquisition of product information (B = .42, t = 3.51, $p \leq .001$), it is only marginally related to the acquisition of process information (B = .24, t = 1.86, $p \leq .07$). Conversely, although knowledge redundancy is negatively related to the acquisition of process information (B = –.22, t = –2.11, $p \leq .04$), it is unrelated to the acquisition of product information (B = –.11, t = –1.17, $p \leq .25$). Thus, both H_3 and H_4 receive partial support, because relational embeddedness appears to enhance the acquisition of product information whereas knowledge redundancy appears to diminish the acquisition of process information.

As reported in Table 2, both relational embeddedness and knowledge redundancy have significant, positive effects on two of our three measures of information utilization. Specifically, relational embeddedness is positively related to both new product creativity (B = .33, t = 3.15, $p \leq .002$) and speed of new product development (B = .34, t = 3.90, $p \leq .0001$) but is unrelated to new process creativity (B = .13, t = .97, $p \leq .34$). Likewise, knowledge redundancy is positively related to both new product creativity (B = .19, t = 2.23, $p \leq .03$) and speed of new product development (B = .15, t = 2.10, $p \leq .04$) but is unrelated to new process creativity (B = .12, t = 1.13, $p \leq .26$). Thus, the hypothesized effect of relational embeddedness on information utilization is generally supported, because closer relational ties appear to enhance both new product creativity (H_{5a}) and speed of new product development (H_{5c}). Similarly, the hypothesized effects of knowledge redundancy on information utilization are generally supported, because overlapping skills and knowledge appear to enhance both new product creativity (H_{6a}) and speed of new product development (H_{6c}).

Discussion

In recent years, both marketing scholars (e.g., Sheth and Sisodia 1999; Wind and Mahajan 1997) and marketing professionals (see Gupta and Wilemon 1996) have expressed a considerable degree of interest in horizontal forms of cooperation in general and new product alliances in particular. A topic of concern to both groups is the issue of how to achieve cooperation among competing firms. As recently noted by McEvily and Zaheer (1999, p. 1154), "The balance between interfirm cooperation and competition, while a popular idea, warrants greater research attention." Our study directly addresses these concerns about the tension between cooperation and competition by showing that horizontal alliances differ from vertical ones in both structure and motivation. In addition, we show how these different alliance characteristics affect interfirm cooperation through both the acquisition of information from alliance participants and the use of this information to develop new prod-

TABLE 2
Regression Analysis of Relational Embeddedness and Knowledge Redundancy on New Product Outcomes

	Product Information Acquisition		Process Information Acquisition		New Product Creativity		New Process Creativity		New Product Development Speed	
Key Predictor Variables	B	t-Score	B	t-Score	B	t-Score	B	t-Score	B	t-Score
Relational embeddedness	.42	3.51***	.24	1.86*	.33	3.15**	.13	.97	.34	3.90***
Knowledge redundancy	–.11	–1.17	–.22	–2.11**	.19	2.23**	.12	1.13	.15	2.10**
Control Variables										
Number of firms	–.03	–.62	.02	.28	–.13	–2.73***	.04	.64	.07	1.87*
Relationship history	.12	1.27	.12	1.18	–.04	–.43	–.04	–.34	.12	1.70*
Stage of development	–.01	–.07	–.05	–.41	.17	1.64*	.27	2.17**	.04	.51
Skill-based objectives	.30	2.24**	.09	.63	.43	3.64***	.47	3.22***	.28	2.82***
Cost-based objectives	–.15	–1.46	–.06	–.53	–.05	–.52	–.06	–.50	–.01	–.14
Alliance scope	.02	.06	.41	1.23	–.02	–.09	–.12	–.37	–.11	–.49
Alliance composition	–.30	–.66	–.17	–.36	–.33	–.92	.38	.77	1.03	3.16**
R^2 (adjusted)	.38 (.31)		.22 (.13)		.46 (.40)		.27 (.18)		.40 (.34)	

*Significant at $p \leq .10$.
**Significant at $p \leq .05$.
***Significant at $p \leq .01$.

ucts and processes. Thus, our study provides a first step in the direction toward understanding how to achieve and sustain cooperation among competitors compared with channel members. In this final section, we highlight the key implications of our findings, discuss potential limitations, and identify future research directions.

Theoretical and Substantive Implications

Tie strength and alliance composition. As suggested by a growing number of interorganizational researchers (e.g., Achrol 1997; Sheth and Sisodia 1999; Sivadas and Dwyer 2000), relations among competitors are qualitatively different from relations among channel members. Our results support this view by showing that participants in horizontal alliances possess both higher levels of knowledge redundancy and lower levels of relational embeddedness compared with vertical alliance participants. In effect, competitor-centered alliances can be thought of as networks dense in overlapping knowledge but sparse in relational norms. This combination of dense knowledge and sparse relations runs counter to the traditional conceptualization offered in the strength-of-ties literature. Thus, although individual actors may display both high levels of redundancy and high levels of embeddedness (i.e., close friends), this combination seems unlikely among interorganizational actors. This finding is important because it questions the existing notion that weak ties serve as important bridges through which information is transmitted (e.g., Frenzen and Nakamoto 1993; Granovetter 1973). In an interorganizational context, strong ties (i.e., channel members) are more likely to serve this bridging function than weak ties (i.e., competitors) because of their higher level of relational embeddedness and lower level of knowledge redundancy.

As a result, the challenges facing managers in horizontal alliances appear to be quite different (and much stiffer) than the challenges facing their counterparts in vertical alliances. Specifically, mangers seeking to develop new products through alliances with competing firms face the dual challenge of cooperating with firms that can provide relatively little complementary knowledge and are reluctant to share their knowledge. This may be an important reason that horizontal alliances are found to be less stable than vertical ones (Park and Russo 1996). In summary, it appears that despite their collaboration as alliance participants, horizontally related firms have difficulty balancing the tension between cooperation and competition (see McEvily and Zaheer 1999).

One possible solution for minimizing tension between horizontal alliance participants may be to establish stronger informal linkages among competitors through such activities as trade show meetings, informal know-how transfer among engineers, and active membership in trade associations. As noted by Lee and Lee (1992), the vast majority of cooperative R&D activity is informal in nature and occurs through these types of mechanisms. For example, engineers often engage in informal know-how trading activity through impromptu meetings at conferences or trade association meetings. Likewise, manufacturers often solicit informal advice from channel members when designing a new product. Thus, formal new product alliances may be more successful when they develop as an extension of these informal processes.

Relational embeddedness, knowledge redundancy, and information acquisition. As expected, our results show that both relational embeddedness and knowledge redundancy play an important role in determining the amount of new product–related information a firm acquires from its fellow alliance participants. However, our results also suggest that the impact of these two features of tie strength varies depending on the type of information considered. Specifically, embeddedness appears to influence the amount of product information a firm acquires, whereas redundancy appears to influence the amount of process information a firm acquires.

The differential effects for relational embeddedness on product versus process information suggest that information transfer among alliance participants is more than a passive diffusion process. Thus, the nature of the relationship between alliance participants plays an important role in regulating the flow of information. As Frenzen and Nakamoto (1993, p. 363) note, "When transmitters are allowed to behave as gatekeepers, the flow of word-of-mouth information can be greatly disrupted." In a new product alliance context, participants appear to guard their gates carefully to ensure that valuable product-related information is not transferred to partners with whom they share low levels of embeddedness because of fears of having this information opportunistically exploited (see Williamson 1985). This finding is congruent with a recent study by Macdonald (1995), which finds that interfirm cooperation is hampered by many senior managers' reluctance to release product-related information, because they commonly view it as a commodity to be hoarded. Such concerns seem less salient for process information, as this type of technology is more tacit and less accessible through reverse engineering (Teece 1998).

Our finding that redundancy has a negative influence on the acquisition of process information but is unrelated to the acquisition of product information may have important implications for researchers concerned about the role of structure versus motivation among social actors. In his initial conceptualization, Granovetter (1973, p. 1371) suggests that weak ties provide key information benefits because of their structural network characteristics (i.e., low degree of knowledge redundancy). Therefore, he argues for "the primacy of structure over motivation" in terms of the relationship between tie strength and information flow. Since then, the issue of the information-related value of structure versus motivation (Frenzen and Nakamoto 1993) has been hotly debated by strength-of-ties researchers. However, these researchers have paid little attention to the type of information flowing between social actors. Our findings offer a conceptual refinement by distinguishing between information about techniques and skills and information about facts and findings, as well as an empirical contribution by finding that the structural aspects of interorganizational ties are more important for acquiring information about processes than products. This finding may be due to the likelihood that competing firms are working on similar technologies independently (Allen 1983) and thus have less need to acquire process-related information from each other.

Relational embeddedness, knowledge redundancy, and information utilization. As described thus far, the portrait of horizontal new product alliances appears rather bleak. We have found that compared with vertical alliance participants, horizontal alliance participants have lower levels of relational embeddedness and higher levels of knowledge redundancy and that this combination is associated with lower levels of information acquisition. Therefore, it may seem surprising that despite these challenges, many firms choose to partner with competitors rather than channel members (Hladik 1988). For example, 40% (42 of 106) of the firms in our sample were engaged in an alliance in which half or more of the participants were competitors.

To date, existing explanations for horizontal collaboration have centered on economic efficiency, such as the desire for competitors to develop common industry standards or lower the collective costs associated with new product development (e.g., Sakikabara 1997; Vonortas 1997). Our findings suggest an alternative explanation. Specifically, although efficiency concerns may be valid, horizontal new product alliances also appear to enjoy benefits of new product development effectiveness in the form of higher levels of new product creativity and faster speed of development due to the synergy created by the redundancy of their product development–related knowledge, skills, and capabilities (see Olk 1997; Sivadas and Dwyer 2000). Thus, our findings offer a novel, information utilization–based explanation for the popularity of horizontal alliance activity. These findings also offer an alternative view of the strength of weak ties (Granovetter 1973). Traditionally, weak ties are viewed as advantageous because weakly connected actors share a low degree of knowledge redundancy, which enhances information acquisition. In contrast, our findings suggest that in an interorganizational context, weak ties may be advantageous because a high degree of knowledge redundancy among competing firms enhances information utilization.

In contrast to the information utilization benefits of redundancy (as well as embeddedness) for both new product development speed and new product creativity, this aspect of tie strength has little effect on new process creativity. Traditional economic thought suggests that compared with product innovations, process innovations are more likely to be internally generated as by-products of production (Klepper 1996). Therefore, if process innovation is merely a secondary outcome of product innovation, the structural and motivational aspects of a new product alliance may be relatively unimportant for the development of new processes. Although the exact nature of the relationship between alliance characteristics and new process development is hard to determine from a single study, our results support traditional economic thought and suggest that the tie strength has a larger impact on the development of new products than new processes. As seen in Table 1, this assertion is supported by the respondents' indications that their new products were significantly more creative than their new processes (product creativity = 5.29, process creativity = 4.81; t = 4.14, $p \leq .001$).

Potential Limitations

Some researchers have expressed concern about organizational studies that employ the view of only a single informant (e.g., Phillips 1981). Although our study uses a single-informant approach, we believe that this approach is warranted for several reasons. First, because our research objective focuses on obtaining global measures of new product–related activities rather than an aggregation of individual perceptions of these activities, the use of a single key informant seems appropriate. Second, as recommended by Campbell (1955), these informants were carefully selected for their unique expertise (which was verified through validity checks). Finally, as noted by Griffin (1993a, p. 120), for most new product development studies, the estimates provided by individual informants "are surprisingly robust—they usually fall within 5%–10% of each other."

A related limitation pertains to our use of subjective managerial perceptions rather than more objective new product–related outcomes. Although objective outcome measures may be desirable, they are difficult to acquire and even harder to interpret (Griffin 1993a). As Smith, Carroll, and Ashford (1995, p. 17) note, subjective measures of managerial perceptions are appropriate for studies of interorganizational collaboration, because "many of the benefits of cooperation ... can be defined in noneconomic terms." Furthermore, Dess and Robinson (1984) show that managerial perceptions are generally consistent with objective measures of performance. Finally, objective measures may also be problematic, because they usually require higher level of measurement aggregation, which often leads to higher levels of respondent uncertainty and greater rates of survey error (Hu, Toh, and Lee 1996).

It should also be noted that our sample is composed of firms that have voluntarily filed their alliance with the U.S. Department of Justice in order to seek the protection of the NCRA. Thus, data obtained from these respondents could reflect a self-selection bias. Specifically, participants concerned about antitrust prosecution may be more likely to file under the NCRA. Given these antitrust concerns, these firms may be wary about sharing sensitive information with their fellow participants. This wariness may have influenced our findings about the effects of tie strength on information acquisition. However, we believe that the possibility of such contamination is remote, because our findings suggest that highly competitor-centered alliances account for only a small portion of all NCRA filings. In addition, because the NCRA provides many benefits and filing is cheap and easy, any firm engaged in new product alliance activity has a strong incentive to register under the NCRA. Nevertheless, given the diversity of collaborative activity in general, there are likely to be several new product alliances not filed under the NCRA for various reasons. Unfortunately, other than the NCRA filings, there is no systematic data source of U.S. firms engaged in new product alliance activity (Hemphill 1997).

As a final limitation, we focus our analysis on the relationship between alliance composition and tie-strength dimensions (by ANOVA) and then assess the impact of these dimensions on new product outcomes (by GLM regression). Using a strength-of-ties perspective, we view relational embeddedness and knowledge redundancy as simply correlates (rather than consequences) of alliances with varying composition (i.e., horizontal versus vertical). Therefore, the precise causal linkage among alliance composition, tie-strength dimensions, and new product outcomes remains to be determined. As a means of clarifying the causal sequence among these variables, alternative conceptual models should be tested. For example, one such model could examine the moderating influence of embeddedness and redundancy on the relationship between alliance composition and new product outcomes. In addition to alternative conceptualizations, future research efforts should consider alternative (and finer grained) measures of alliance composition, because our classification focuses on the percentage of competitors in a given alliance and ignores possible distinctions between buyers and suppliers. Thus, although our findings generally support our hypotheses, these limitations suggest possible boundary conditions for our results.

Future Research Issues

We encourage other scholars to use our research as a starting point to investigate the interorganizational dimension of new product development. Many marketing and management scholars note that a firm's survivability and growth is highly dependent on its ability to develop innovative new products (e.g., Dickson 1992; Zander and Kogut 1995). Because of the critical importance of new product development for both individual firms and the U.S. economy, marketing scholars need to adopt a broader perspective on product development issues and examine the role of new product alliances and other types of interfirm cooperation as a source of new product innovations. For example, researchers interested in intraorganizational new product teams (e.g., Walker and Ruekert 1987) may wish to examine the applicability of their concepts and findings to the interorganizational product development teams that populate new product alliances.

We also encourage marketing orientation scholars to investigate the relationship between alliance participation and market orientation. The market orientation literature indicates that intraorganizational information exchange is a key component of a market orientation (Kohli and Jaworski 1990; Slater and Narver 1995). In addition, market-oriented firms may also engage in a high degree of interorganizational information exchange. Therefore, researchers could explore the relationship among alliance participation, information exchange, and market orientation through a longitudinal study that tracks alliance participants from initial alliance formation to dissolution. As part of this longitudinal study, researchers could explore the impact of informational exchange activities on managerial perceptions of competitors and customers.

Finally, we encourage research on the broader societal and consumer implications of new product alliance activity. As sanctioned by the NCRA, the U.S. Department of Justice views new product alliances as a means of encouraging innovation and enhancing the competitiveness of U.S. industry (Harris and Mowery 1990; Hemphill 1997). However, many scholars and public policy officials remain deeply concerned about the potential anticompetitive effect of collaborative R&D (Link 1996; Wright 1986). This concern seems somewhat warranted, because prior studies have found that new product alliances are disproportionately composed of large firms making R&D investments in existing lines of product development (Scott 1988; Vonortas 1997). As this debate unfolds, some researchers (e.g., Petit and Tolwinski 1999; Sakakibara 1997; Wright 1986) claim that alliances among competitors are especially problematic from a public policy perspective because of the risks of collusion and underinvestment in R&D. Our findings suggest that alliances among competitors may actually enhance innovation, because their high degree of knowledge redundancy appears to lead to products that are both more innovative and more quickly introduced to the marketplace. However, these results are preliminary, and further research is needed to understand more fully the complex relationship among social welfare, economic efficiency, and interfirm cooperation.

Appendix
Key Measures

Amount of New Product–Related Information Acquired (new measure; seven-point Likert scale)

Please rate the *amount* of the following types of *information* that your firm has acquired from the other participants in this venture:

Product Information Acquisition

1. Information about venture participants' R&D projects.
2. Research findings related to the development of new products.
3. Information about key product specifications.
4. Information about end-user requirements.
5. Information about competitors' technology.

Process Information Acquisition

1. Information about new manufacturing processes.
2. Insights into new ways to approach product development.
3. Information about new ways of combining manufacturing activities.
4. Insights about key tasks involved in the production process.
5. Insights into new ways to streamline existing manufacturing processes.

New Product/Process Creativity (adapted from Moorman 1995; seven-point semantic differential scale)

Product Creativity

In regard to *new product creativity*, please rate the degree to which the new *products* generated by your firm's participation in this venture are or are expected to be

1. Very ordinary for our industry–very novel for our industry.
2. *Not* challenging to existing ideas in our industry–challenging to existing ideas in our industry.
3. *Not* offering new ideas to our industry–offering new ideas to our industry.
4. *Not* creative–creative.
5. *Un*interesting–interesting.
6. *Not* capable of generating ideas for other products–capable of generating ideas for other products.
7. *Not* promoting fresh thinking–promoting fresh thinking.

Process Creativity

In regard to *new process creativity*, please rate the degree to which the *processes* used to manufacture the new products generated by your firm's participation in this venture are or are expected to be

1. Very ordinary for our industry–very novel for our industry.
2. *Not* challenging to existing ideas in our industry–challenging to existing ideas in our industry.
3. *Not* offering new ideas to our industry–offering new ideas to our industry.
4. *Not* creative–creative.
5. *Un*interesting–interesting.
6. *Not* capable of generating ideas for other products–capable of generating ideas for other products.
7. *Not* promoting fresh thinking–promoting fresh thinking.

New Product Development Speed (adapted from Griffin 1993a, b and McDonough and Barczak 1991; seven-point semantic differential scale)

In regard to the *speed of development*, please rate the degree to which the new products or processes generated by your firm's participation in this venture are or are expected to be

1. Far behind our time goals–far ahead of our time goals.
2. Slower than the industry norm–faster than the industry norm.
3. Much slower than we expected–much faster than we expected.
4. Far behind where we would be had we gone it alone–far ahead of where we would be had we gone it alone.
5. Slower than our typical product development time–faster than our typical product development time.

Relational Embeddedness (new measure; seven-point Likert scale)

Please rate the degree to which the following items accurately describe the nature of your firm's overall relationship with the other organizations participating in the cooperative research venture:

1. We feel indebted to our collaborators for what they have done for us.
2. Our engineers share close social relations with the engineers from collaborating organizations in this venture.
3. Our relationship with our collaborators can be defined as "mutually gratifying."
4. We expect that we will be working with our collaborators far into the future.

Knowledge Redundancy (new measure; seven-point semantic differential scale)

Please rate the degree to which the participant listed below compares to your firm in general:

1. Produces very different products–produces very similar products.
2. Has complementary new product development skills–has overlapping new product development skills.
3. Their engineers have different knowledge from ours–their engineers have the same type of knowledge as ours.
4. Has very different resources–has very similar resources.

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Mark B. Houston, Beth A. Walker, Michael D. Hutt, & Peter H. Reingen

Cross-Unit Competition for a Market Charter: The Enduring Influence of Structure

Marketing strategists who operate in turbulent markets face a competitive landscape marked by volatility and evolving market structures. As customer requirements change, an organization that stays in alignment with its markets will form new business units or alter the market charters of existing business units. In a longitudinal study, the authors traced the structural realignments that accompanied a *Fortune*-500 firm's entry into the Internet market. As the charter moved from a freshly created unit to an established business unit, the authors found support for the prediction that the former organizational structure will continue to shape the identity, beliefs, and social ties of managers. The study highlights the structural, social, and cognitive factors that must be managed as corporate decision makers search for the best strategy–structure fit for an emerging market opportunity.

Aligning the structure of the modern corporation to capture emerging market opportunities is a continuing challenge for firms that compete in turbulent markets (Day 1997). In the multidivisional organization, various interdependent divisions are "chartered" to monitor one or more businesses and the associated market domains. However, fast-paced changes in customer requirements expose gaps in a firm's market alignment that top management attempts to fill by creating new business units or adjusting the market charters of existing business units. A charter is defined as the product and market arenas in which a business unit actively participates and for which it has been assigned responsibility within the firm (Galunic and Eisenhardt 1996). The product markets that constitute the domain of a business unit can be defined in terms of the customer benefits provided, the technologies applied, the customer segments served, and the level of integration represented in the value creation process (Abell 1980; Day 1984). Charter change, then, involves the assignment of responsibility for a particular product-market domain to a new or existing business unit. Charter changes can involve the creation of a new business unit, the addition of a product-market domain to an existing business unit, or the transfer of responsibility for a product market from one business unit to another. When markets are relatively stable, charter change is less critical, but when markets are turbulent, charter adjustments enable firms to focus on the most promising opportunities (Eisenhardt and Brown 1999). For example, to capitalize on its competencies in ink-jet printing and scanning technologies, Hewlett-Packard surprised competitors by forming a new business unit and assigning it responsibility for a promising new market—digital photography (Kaplan 1999). In line with Webster's (1997) and Cravens's (1997) work, charter change ignites a set of strategic processes that spotlights marketing's strategic role in the firm at both the corporate and business unit levels.

By guiding the strategic process of matching the firm's core competencies to customer needs, marketing assumes an active role in the charter change process. Central to the strategic dialogue at the corporate level is the question of which business unit is best equipped to deliver superior customer value and compete in this newly defined market domain. Instead of having a unitary voice from marketing, managers representing various business units may hold different views regarding the preferred path for marketing strategy and the desired form that the value proposition should take. These divergent positions are grounded in the distinct identities that various business units possess (Albert and Whetten 1985). A charter carves out the product and market arena that a business unit serves, defines its turf and relative status in the organization, and shapes the pattern of reward allocation observed (Kramer 1991). When a charter is won, a business unit may subsequently lose it, relinquishing responsibility to another business unit if performance lags or the expectations of top management are not met.

The context for our study was provided by the creation of a new business unit (referred to as INFOSERVE) at a *Fortune*-500 high-technology firm (referred to as COMMCO). The INFOSERVE unit was chartered by top management to lead the firm's entry into the Internet market. Rapidly changing perceptions of customer needs, combined with the recently announced entry of a formidable new competitor to INFOSERVE, provided added appeal to the market context. Because the Internet market constituted an attractive domain, rival business units had actively lobbied top management for the initial charter assignment. By failing to

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articulate a clear Internet strategy, INFOSERVE subsequently lost the charter, and senior management at COMMCO reassigned responsibility for the Internet market to a rival business unit. The purpose of this article is to examine the impact of charter change on the strategy beliefs, social ties, and identity of the affected managers. The study provides a rare opportunity to isolate the structural, social, and cognitive factors that hamper the development of marketing strategy when a charter is transferred from one business unit to another. Combining qualitative and quantitative methodologies, we first examined the beliefs of INFOSERVE executives and those of executives (including presidents) of competing business units regarding the strategic significance of the online venture and the critical strategic issues that confronted the initiative. Next, after top management reassigned the Internet charter to COMMCO's largest business unit, we again examined the beliefs of key participants and isolated managers' organizational identities and patterns of social ties that endured in the new organizational structure.

Our study differs from previous research on several counts. First, although a rich research tradition has centered on cross-functional working relationships in new product development (e.g., Griffin and Hauser 1996), scant attention has been given to the interplay among business units as established charters are altered to meet changing customer requirements or capture new market opportunities. By adopting the business unit as the unit of analysis, our study moves beyond cross-functional comparisons to reveal the strategy beliefs that divide senior executives and marketing managers who represent one business unit versus another. Although marketers are encouraged to play an integrative role in keeping the organization focused on the customer (Anderson 1982; Day 1992; Webster 1997), our study suggests that such integration efforts can be derailed by rigidities in managers' beliefs and communication patterns that are shaped by the organizational structure. Research by Homburg, Workman, and Krohmer (1999) reveals the influential role that marketing managers assume in shaping the strategic direction of business units. Our study contributes to the marketing literature by illuminating the politics of charter change and the special challenges that market strategists face in developing a value proposition for customers that will win the support of surrounding business units.

Second, charter change has received little attention in the marketing literature but assumes a prominent role in the strategies of leading firms, "where the new competitive reality includes volatility and evolving market structures" (Prahalad 1995, p. v). Rosa and colleagues (1999) demonstrate that producers and consumers possess shared knowledge structures that define product markets and that their understanding of markets evolves as these knowledge structures change. By contrast, our study illustrates how managers who represent different business units share markedly different beliefs regarding how a particular product market should be defined and addressed.

Third, Day (1997) argues that organizational design issues are rising to the top of the agenda for the future of marketing as organizations seek to continually adapt the alignment of strategies, activities, and distinctive capabilities to shifting market requirements (for a complete review of marketing organization, see Workman, Homburg, and Gruner 1998). Although a strong research tradition encircles strategic change (e.g., Pettigrew and Whipp 1991; Quinn 1980) and the strategy–structure–performance paradigm (for a comprehensive review, see Galunic and Eisenhardt 1994), there are no prior studies, to our knowledge, that have systematically examined the impact of a structural realignment on the identities, beliefs, and patterns of social ties of managers across business units. By addressing these issues, the present study contributes to this research stream and isolates important inertial barriers that emerge as an organization searches for the proper strategy–structure fit in a new market domain. Moreover, the study responds to the call of strategy researchers (e.g., Galunic and Eisenhardt 1994; Varadarajan 1992; Varadarajan and Clark 1994) for research that moves beyond a static view of product-market boundaries and considers the evolving nature of markets and the corresponding structural changes that are spawned in the organizations that serve them.

Our discussion is divided into three parts. First, we provide a synthesis of the collective action theory of strategic decision processes—a conceptual perspective particularly appropriate to our study—and explore the structural forces that shape the beliefs of various interest groups when a charter change is implemented. Second, we report research results from the examination of managers' strategy beliefs, both before and after a major change in organizational structure, and isolate the social ties and patterns of identification that emerged in the new structural home for the market initiative. Third, we conclude by discussing key managerial and research implications.

Cross-Unit Competition for a New Charter

Corporate strategy, business strategy, and marketing strategy interact to shape the competitive advantage of individual business units within a firm's portfolio of businesses (Varadarajan and Jayachandran 1999). By centering on issues that relate to the organization's domain and the allocation of resources across business units, charter change involves a strategic decision process that is best captured by theories of collective action (Walker, Ruekert, and Roering 1987). The process seeks to improve organizational performance by matching the firm's capabilities to a newly defined market space for the organization. Possible structural outcomes of the process include the creation of a new business unit or a change in the market charters of existing units. During strategic decision processes, interest groups form around formal objectives and the goals of business units; they also form around differences among groups at varying levels of the organizational hierarchy (Dickson 1992; Pettigrew and Whipp 1991). Drawing on Anderson's (1982) work, we define charter change as the outcome of a bargaining process among business unit coalitions.

Rapidly changing technologies and customer requirements create business opportunities that an organization might profitably serve, thereby creating a market for charters among business units (Galunic and Eisenhardt 1996). In this situation, the business units that constitute an organization are competing within an "economy of charters" for the opportunity to lead the firm's strategy in a choice market domain. Rather than compete only for financial resources within the organizational hierarchy, business units also actively compete for the information, power, support, and legitimacy that a new or expanded charter provides (Dutton 1993). The nature of competition among business units varies by organization.

Cooperative Versus Competitive Structures

Firms that emphasize cooperation versus competition have different internal configurations with regard to centralization, integration, control practices, and incentive systems (Hill, Hitt, and Hoskisson 1992). In cooperative organizations, cooperation between business units is fostered by senior corporate executives who exercise some degree of centralized control to achieve coordination across business units (Mintzberg 1983). Moreover, the corporate office also uses integrating mechanisms to achieve lateral communication among strategic business units, evaluates business unit performance on a range of subjective (e.g., extent of cooperation among interdependent units) and objective (e.g., market share, growth) criteria, and uses incentive systems for business unit managers that are linked to corporate rather than business unit profitability (Gupta and Govindarajan 1986; Keating 1997). In contrast, in competitive organizations, competition among business units is fostered by organizational arrangements that feature a decentralized structure and an arm's-length relationship between the corporate office and business units. Business unit managers are responsible for operating decisions, objective financial criteria are used to measure unit performance, and incentive systems are tied directly to business unit profitability. Because a newly chartered business unit requires an exchange of information, knowledge, and resources with other business units, cooperative structures are more conducive to charter development than competitive structures are. Cooperative behavior is also enhanced when organizational members have a common identity.

The Influence of Structure on Identity and Beliefs

Social identity theory (Tajfel and Turner 1985) suggests that people define their self-concepts through their connections with social groups. Although the self-concept may be composed of a variety of identities (e.g., gender, race, personality traits), organizations also offer an important source of identification (Ashforth and Mael 1989). Because identification assumes an important role in defining and enhancing the self-concept (Dutton, Dukerich, and Harquail 1994), people tend to identify most strongly with groups that are distinctive and prestigious and that compete with a salient set of out-groups. For example, a person's identity may be derived from organizational membership, department, function, or work group.

In a given context, organizational members can invoke higher-order identities (division or organization) or lower-level identities (function or work group) (Ashforth and Johnson 2001). In some firms, such as Hewlett-Packard, company-wide socialization programs are used to persuade employees to define themselves in terms of a higher-order rather than a lower-order identity (Tsui 1994). The more salient a higher-order identity, the more likely it is that an organizational member will pursue organizational goals ahead of narrow lower-order goals, interpret issues and events from a higher-order perspective, cooperate with other organizational members across units, and engage in organizational citizenship behaviors (Ashforth and Mael 1996; Dutton, Dukerich, and Harquail 1994). Although many organizations strive to create a shared identity among their members, scarce resources and reward systems that typically focus on subunit performance spawn heterogeneous identities (business unit, department, work group) that tend to conflict and compete (Ashforth and Mael 1989).

The structural categories of an organization—such as business units—determine the contours of social comparison (us versus them) while also shaping the pattern of reward allocation observed (Kramer 1991). Structural categories also define the pattern of interaction and tell organizational members who they are, what their role in the organization is, and where they fit in the formal and informal hierarchies that constitute the organization. Managers derive a sense of identity from the affiliation with an organization or their connection to social groups within the organization, such as functional area or business unit (Bhattacharya, Rao, and Glynn 1995; Fisher, Maltz, and Jaworski 1997). In large and heterogeneous organizations, managers tend to identify more strongly with their immediate work groups than with the organization as a whole (Ashforth and Mael 1989; Kramer 1991).

Organizational members who strongly identify with a particular unit engage in a pattern of in-group and out-group dynamics. Strong identification prompts increased cooperation with organizational members who are part of the group and increased competition with nonmembers (Dutton, Dukerich, and Harquail 1994). Social identity theory provides insights into the meaning that organizational members ascribe to strategic change. First, to the extent that the business unit domain defines the identity of organizational members and provides a base of power, members will be reluctant to see those boundaries altered. A threat to a group's domain tends to strengthen members' identification with the group. Cross-unit conflict intensifies as "group lines are drawn more sharply, values and norms are underscored, and we/they differences are accentuated" (Ashforth and Mael 1989, p. 25). To illustrate, Fisher, Maltz, and Jaworski (1997) find that marketing managers who identify more strongly with the marketing function than with the organization are more likely to use coercive influence strategies when dealing with people from other functions. Second, identification strongly influences cognition (by priming attention), affect (by defining what is valued), and behavior (by promoting identity-consistent acts) (Ashforth and Mael 1996). Identification helps organizational members direct interpretation by providing a reference point for gauging the importance of strategic issues, influencing perceptions of their legitimacy, and shaping their meaning (Dutton and Dukerich 1991). When that reference point is the organization as a whole (higher-order identity), organizational members are more likely to think, feel, and act in ways consistent with broader organization goals. Alternatively, when the reference point is the business unit, a strong identity can also promote what Dougherty (1990, 1992) describes as distinct "thought worlds," in which one unit focuses on different environmental contingencies and reflects different values, beliefs, and goals than another unit (Daft and Weick 1984; Frankwick et al. 1994).

To recapitulate, these structural-cognitive perspectives suggest that cooperative structures, such as reward systems tied to organizational goals and senior management's success in making higher-order identities more salient to organizational members, will contribute to shared organizational beliefs regarding a strategic initiative for a new market. In contrast, for organizations that emphasize competitive structures and those in which lower-level identities (business unit) are more salient to organizational members, we predict that managers from different business units will form different interpretations regarding a strategic initiative for a new market: a charter change. By posing a threat to the boundaries and activity domain of some units and an opportunity for others, a change of charters spawns rivalry among units that wish to defend or expand their base of power within the organization. Specifically, we propose the following:

> H_1: Regarding a strategic initiative for a new market, (a) the beliefs of managers will vary by business unit, and (b) the beliefs that are shared among managers will vary by business unit

Organizational Inertia

The importance of achieving a fit or consistency between organizational states and environmental demands is evident in conceptual perspectives from the strategy literature (e.g., Porter 1980). In a theory of organizational evolution, however, Tushman and Romanelli (1985) argue that the very forces that enhance success and create consistencies in a firm's operations become an impediment to change when environmental conditions change. They (p. 190) suggest that "internal requirements for coordinated activities and flows result in increased structural elaboration and social complexity." Organizational members build elaborate routines to gain greater control over their work, and these routines focus attention and filter information in support of the status quo. Moreover, through joint decision making, they develop shared commitments and beliefs that justify previous actions (Weick 1979).

Within organizations, these interdependent structural and social linkages increase individual and group commitments to the current strategy course but reduce the probability that fundamental change can be successfully introduced (Miller and Friesen 1980). Research suggests that cognitive inertia prevents managers from modifying their cognitive structure in response to new information from the environment (Reger and Palmer 1996). For example, Hodgkinson (1997) finds that managers' cognitions of competitive conditions in a volatile market are highly stable over time, despite significant changes in the market. Organization–environment consistencies also contribute to the development of a structurally and socially anchored inertia (Hannan and Freeman 1984; Tushman and Romanelli 1985). By competing in a particular industry or market domain, an organization develops webs of interdependent relationships with customers, suppliers, channel members, alliance partners, and other external constituents. As these relationships develop and become institutionalized, the organization develops inertia—a resistance to all but incremental change. As Ashforth and Mael (1996, p. 53) note, "Over time, identity and strategy tend to become more tightly coupled as the latter comes to symbolize the former." In support, Rosa and colleagues (1999) view product markets as socially constructed knowledge structures that are shared among producers and consumers. Neither orchestrated nor imposed by producers or consumers, product markets evolve from producer–consumer interaction feedback effects.

Drawing on these conceptual perspectives, we argue that the structural forces that advance performance and define a firm's activities in a particular market domain also create rigid cognitive and social boundaries that are difficult to erase as technologies and customer needs evolve. Although the formal organizational structure can be redesigned to meet changing market requirements, these inertial forces may continue to tie organizational members to the old structure, which provides an enduring source of identification. Such inertial forces may be especially strong in organizations characterized by multiple business unit identities rather than a salient higher-order identity and those that emphasize competitive versus cooperative structures. Special challenges confront newly chartered business units in forging ties with established business units that have deeply embedded systems, processes, and strategies. On the basis of this discussion, we propose the following:

> H_2: After a structural realignment, the former organizational structure will continue to shape the (a) business unit identity of affected managers, (b) strategy beliefs of managers, and (c) social ties of managers.

We contend that it is a manager's strength of identification with the unit, rather than mere membership in a business unit, that shapes strategy beliefs and social ties (Ashforth and Mael 1996). A market charter is created to combine organizational resources and competencies in a new way to capture a market opportunity. To succeed in the new market domain, members of the newly chartered unit depend on competency-related knowledge flows from other business units (Galunic and Rodan 1998). Such knowledge flows may include the exchange of information, know-how, and histories regarding competencies. However, competencies can become institutionalized, thereby creating rigidities that impede the flow of knowledge across areas (Leonard-Barton 1992). The more strongly a manager identifies with a particular competency, the higher is the resistance to new knowledge from other competency areas (Galunic and Rodan 1998). Boundaries between competencies pose a special problem for new market charters. As people interact within a competency area (e.g., Internet technology), they develop a common language and interpretive systems that facilitate internal information flows but restrict the dissemination of knowledge across competency areas. On the basis of this discussion, we propose the following:

> H_3: The strength of a manager's business unit identity will mediate the relationship between business unit membership and (a) the strategy beliefs of affected managers and (b) the social ties of managers.

Methodology

Context

We sought to identify a high-technology firm that featured multiple business units that were competing for a coveted market charter. Consistent with these criteria, the entrance of COMMCO, a *Fortune*-500 communications firm, into the Internet market provided an ideal context for our research. The senior leadership team at COMMCO believed that the development of an online service was critical to the firm's long-term strategic position. Initially, top management created a new business unit, INFOSERVE; staffed it with managers from other units within COMMCO; and assigned the unit the market charter for the Internet.

To draw on the collective strengths of COMMCO, top management also enlisted executives from other business units to provide the information, resources, and technical expertise that the INFOSERVE unit might require. From the outset, however, many executives from surrounding business units strongly opposed the INFOSERVE position on fundamental strategic issues (e.g., Should the online service be targeted to the consumer or business market?). Moreover, these executives argued that their respective business units were better equipped to serve online customers.

Executives from two focal business units at COMMCO were central players in the debate: one business unit that develops offerings targeted to the business market (the rival business unit) and a second business unit that is the firm's largest revenue and profit producer and serves the consumer market (the dominant business unit). For executives of a third business unit (the neutral business unit), the Internet initiative had little direct bearing on the core mission of the group. The result of the active internal debate regarding the strategic course for the Internet initiative was that the Internet charter and INFOSERVE's personnel were reassigned to the dominant business unit. In terms of physical location, former INFOSERVE managers were dispersed throughout the dominant business unit. This structural realignment occurred seven months after the INFOSERVE unit was created.

To test the hypotheses, we collected data at two points in time. In the first phase, we conducted depth interviews midway through INFOSERVE's seven-month existence as an independent unit to examine the impact of business unit membership on the valence, sharing, and content of managers' beliefs (Frankwick et al. 1994). In the second phase, a questionnaire was administered four months after INFOSERVE lost the charter. The goal in this phase was to capture the lingering effects of initial business unit membership on a manager's identity, beliefs, and patterns of social ties relevant to the online venture. In a turbulent environment, the managers who are directing a new market initiative face immediate pressure to perform from both the corporate level and surrounding business units (Galunic and Eisenhardt 1996). We believed that four months was an appropriate interval for the INFOSERVE members to transition fully into the dominant business unit. Therefore, seven and one-half months intervened between the first and second round of data collection. Our research is consistent with that of Van de Ven (1992), who admonishes researchers to study organizational phenomena in "real time," before participants know the final outcomes of decisions and actions.

Phase 1

A snowball sampling technique was used to identify the set of key managers that was most involved in shaping and competing for the Internet initiative within COMMCO. The technique isolates the relevant set of participants by asking each actor to identify others with whom he or she communicates about a specific issue. In this case, we asked managers the following questions: "Whom, within COMMCO, do you talk with about Internet initiatives?" and "Are there other influential people in or outside of your unit with whom we should talk about the Internet initiative?" In this study, our set of influential managers included executives who were mentioned by at least two other managers. This research approach isolated the executives who were most directly involved in the venture. Following this procedure, we identified 39 high-level executives (INFOSERVE, n = 12; dominant business unit, n = 11; rival business unit, n = 8; neutral business unit, n = 8). The INFOSERVE team included members who were formerly from the rival (n = 7), neutral (n = 3), and dominant (n = 2) business units. Our sample included the president of each participating business unit, corporate vice presidents, and important senior-level managers who represented marketing as well as other functional domains.

In Phase 1, a personal (n = 17) or telephone (n = 22) interview was conducted with each of the key participants. The interviews were conducted individually and were tape-recorded with the permission of the respondent. Respondents were assured that their replies would be kept confidential. Interviews averaged approximately one hour. Because the set of beliefs surrounding the Internet charter was not well defined, we used semistructured interviews (versus more structured elicitation techniques) to elicit the potentially wide range of issues that divided the business units (Dougherty 1992).

At first, respondents were asked to describe their personal role and the role of their business unit in the INFOSERVE initiative. Executive participants were then asked to describe the strategic significance of the INFOSERVE initiative to their business unit and to COMMCO as a whole. In addition, respondents outlined the factors they believed would drive the success (failure) of the INFOSERVE initiative. With probing, they provided support for their positions. Participants were also asked to detail other sensitive issues or areas of disagreement that surrounded the launch of the online service. Finally, to isolate the set of executives involved in shaping the INFOSERVE initiative, respondents were asked to identify other executives with whom they had communicated regularly about INFOSERVE as well as others involved in directing the online venture.

To capture differences in the beliefs that members of the focal business units held regarding INFOSERVE's Internet strategy, we systematically coded and analyzed the transcribed interviews. Using exploratory interviews, written communications from INFOSERVE's management, internal documents supplied by INFOSERVE's leadership, and several transcripts, we developed a dictionary for coding positive, neutral, and negative beliefs related to the Internet strategy. In addition, we identified five general categories or themes that reflected the content of the beliefs regarding the strategic significance of INFOSERVE and ten categories that captured the factors that executives perceived would facilitate or hinder its success. Each category reflected a set of beliefs that was positive, neutral, or negative. The dictionary included a definition of each category and sample phrases that reflected each theme.

Following a procedure similar to that used by Frankwick and colleagues (1994), two judges, working independently, coded a subset of the transcripts. The judges then discussed their decisions, fine-tuned category definitions, and considered adding new categories that emerged during the coding process. After reaching a satisfactory level of agreement, the judges completed the coding of the transcripts. Individual beliefs were counted only once, even if the belief was repeated several times during the interview. In completing the task, each judge coded all the transcripts. Calculating Perreault and Leigh's (1989) index of reliability (I_r), intercoder reliability was .847, exceeding the established benchmark ($I_r = .80$) for satisfactory reliability. All disagreements were resolved by discussion. Examples of the belief categories are reported in Table 1.

TABLE 1
Internet Strategy Belief Categories: Illustrative Beliefs

A: The Strategic Significance of INFOSERVE

Belief Category (Valence[a])	Illustrative Beliefs
1. Entry into an attractive new market. (+)	•Future of communication industry is the online market. •COMMCO should be seen as a technology leader
2. A dedicated market charter. (+)	•One unit should coordinate online effort. •A separate business unit can grow online profit.
3. Strengthen relationships in consumer market. (+)	•Add value to current customer's service experience. •Build core business in consumer market.
4. Units divided over target market. (–)	•Cannot separate business offering from consumer offering. •Develop singular offer for home and work.
5. Opposing unit pursues separate initiative. (–)	•INFOSERVE interferes with other desirable initiatives. •Other business units should also pursue the online market.

B: Critical Issues and Success Factors

Belief Category (Valence)	Illustrative Beliefs
1. Lever for growth in consumer business. (+)	•INFOSERVE will create market share. •Strategically compatible with COMMCO's core business.
2. Formidable competitors. (–)	•Many competitors already in market space. •Announced entry by powerful competitor poses a challenge.
3. Level of resource commitment. (=)	•Must invest in technology to win. •Success of INFOSERVE tied to the level of funding provided by COMMCO.
4. Units divided over target market. (–)	•Business–consumer market distinctions are wrong for online customers.
5. Relative size of INFOSERVE unit. (–)	•Difficult to be entrepreneurial in a large organization. •A small unit among giants.
6. Cross-unit collaboration. (–)	•INFOSERVE refuses help from other units. •INFOSERVE is a closed group.
7. Implementation by INFOSERVE unit. (–)	•Executing the strategy is difficult. •Internal priorities are unclear.
8. Credibility of INFOSERVE's leadership. (–)	•No track record. •Little marketing experience.
9. Rigid boundaries at COMMCO. (–)	•Vertical smokestacks provide a barrier for new initiatives. •COMMCO struggles with cross-unit ventures.
10. Dynamic new industry. (=)	•Marketing research needed to understand customers. •This is a young industry, and the demand for online services is uncertain.

[a](+) positive beliefs, (–) negative beliefs, (=) neutral beliefs.

Phase 2

The purpose of Phase 2 was to examine the impact of the former organizational structure on the business unit identity of affected managers, beliefs about the Internet strategy, and the patterns of social ties among study participants. Four months after the Internet charter and INFOSERVE personnel were transferred to the dominant business unit, a mail survey was administered to the 39 respondents who had participated in Phase 1. Twenty-eight usable questionnaires (72%) were returned.

Identity. Following Bhattacharya, Rao, and Glynn (1995), we adapted a scale from Mael and Ashforth (1992) to assess each respondent's strength of identification with the INFOSERVE initiative, the current home business unit (former INFOSERVE members now belong to the dominant business unit), and COMMCO as a whole. To minimize the length of the questionnaire, we examined the items and correlations reported by Mael and Ashforth (1992) and selected four of the six original items for use in this study: (1) When someone criticizes [the INFOSERVE initiative, the home business unit, COMMCO], it feels like a personal insult; (2) I am very interested in what others think about [the INFOSERVE initiative, the home business unit, COMMCO]; (3) The successes of [the INFOSERVE initiative, the home business unit, COMMCO] are my successes; and (4) When someone praises [the INFOSERVE initiative, the home business unit, COMMCO], it feels like a personal compliment. Each item was rated using a five-point scale, where 1 = "strongly disagree" and 5 = "strongly agree." Thus, for each of the three levels (initiative, business unit, firm), a higher score on the scale indicated stronger identification. The coefficient alphas for identification with the INFOSERVE initiative, the home business unit, and COMMCO were .86, .91, and .87, respectively.

Means–end beliefs. Consistent with a belief measurement approach developed by Walker (1985), we assessed the means–end beliefs of key participants regarding various aspects of INFOSERVE's online strategy. According to Walker (1985), a means–end belief links a particular activity or action (e.g., "the planned Internet services") to a specific outcome (e.g., "reach younger, high-tech consumers"). Drawing on the interview data from Phase 1, we constructed 18 statements that reflected a relationship between INFOSERVE's online initiative (means) and a consequence or outcome of that initiative (end). Eleven of the statements depicted a positive means–end association (e.g., "The planned Internet services will help reduce customer turnover"), three of the statements were negatively valenced (e.g., "Development of complex service offerings by INFOSERVE unit increased time to market"), and four means–end beliefs were neutral (e.g., "Innovativeness of Internet strategy depends on COMMCO's financial support"). Using a five-point scale (where 1 = "very weak relationship" and 5 = "very strong relationship"), we asked respondents to rate the strength of the relationship between the means (listed on the left-hand side of the page) and the end (listed on the right-hand side of the page).

Social tie strength. Following the procedures and measures used in other studies of social networks within organizations (Brass and Burkhardt 1993), we provided respondents with a list identifying the key participants in the study. Using two seven-point scales, they rated one another on frequency of interaction (where 1 = "semiannually" and 7 = "daily") and personal closeness (where 1 = "very distant acquaintance" and 7 = "good friend"). A higher scale score indicated a stronger tie. The coefficient alpha for the two scales was .92.

Influence beliefs. Finally, respondents from the list of key participants were asked, "How influential do you feel each manager is to the direction of COMMCO's Internet and online strategies as a whole?" Beliefs about each manager's degree of influence were assessed on a seven-point scale, where 1 = "low influence" and 7 = "high influence."

Analysis and Results

In general, at Phase 1, the results reveal sharp differences across business units on beliefs about INFOSERVE and its Internet strategy. Especially pronounced are differences between INFOSERVE and the dominant and rival business units. Despite the change in charter ownership and resulting realignment that folded INFOSERVE into the dominant business unit several months later, a similar pattern of results emerges at Phase 2. These results suggest that the original business unit assignments continued to shape the identities, beliefs, and social ties of organizational members.

Phase 1 Results: Effects of Initial Business Unit Assignments on Beliefs

We identified four business units as the key players in the internal market for the Internet charter: INFOSERVE, the dominant business unit, the rival business unit, and the neutral business unit. To study the effects of initial business unit assignments on beliefs, we analyzed managers' responses to two questions: (1) What is the strategic significance of INFOSERVE's Internet initiative to your business unit and to COMMCO as a whole? and (2) What are the factors that will drive the success (failure) of INFOSERVE's Internet strategy? For each dependent measure, the responses to each question were analyzed in turn.

Belief valence. Consistent with H_1, the valence of managers' beliefs about the strategic significance of INFOSERVE's Internet initiative differed across business units (see Table 2). To test this hypothesis, we first computed the proportion of positive and negative beliefs elicited by each manager by dividing the number of positive and negative beliefs, respectively, by the total number of beliefs. For beliefs regarding the strategic significance of the Internet initiative, a one-way analysis of variance (ANOVA) revealed a significant relationship between business unit membership and the proportion of positive (and therefore negative) beliefs ($F = 13.66$, degrees of freedom [d.f.] = 3,35; $p < .001$). As reflected by the post hoc comparisons in Table 2, Part A, INFOSERVE managers have a greater proportion of positive beliefs and therefore a smaller proportion of negative beliefs about the strategic significance of the INFOSERVE initiative than managers from the dominant and especially the rival business units.

Similarly, for beliefs regarding the factors that would drive the success or failure of the Internet initiative, a repeated-measures ANOVA revealed a significant belief valence × business unit interaction (F = 4.56, d.f. = 3,35; $p < .008$). In line with beliefs about the strategic significance of the Internet initiative, note in Table 2, Part B, that INFOSERVE managers have a smaller proportion of negative beliefs compared with managers in the rival business unit. In contrast, managers from the dominant business unit have a greater proportion of positive beliefs than managers from INFOSERVE. Analysis of the content of the belief categories presented subsequently shows that whereas the dominant business unit focused on how the online service could bolster its business, INFOSERVE managers centered on the implementation challenges that were delaying their progress. Regardless of business unit membership, the proportion of negative beliefs (critical issues) far outweighed the proportion of positive thoughts (success factors) that surrounded the initiative (F = 74.07, d.f. = 1,35; $p < .001$). Thus, although INFOSERVE managers were enthusiastic about the strategic significance of the online initiative to COMMCO, they were concerned about the competitive and operational challenges the Internet market presented.

Belief sharing. Further support for H_1 was found for shared beliefs. Individually held beliefs may or may not be shared with other managers in a business unit. Sharing among business unit members was assessed through operations on a respondent (i) × belief (j) matrix (A). If respondent i has belief j, then cell ij contains a 1; otherwise, cell ij contains a 0. The number of beliefs shared among group members is given by AA^T. The average number of beliefs a respondent shares with other group members is determined by summing the off-diagonal elements in the matrix AA^T across rows (or columns) and dividing the sum by $n - 1$ (where n = group size). Similar to our analysis of belief valence, we analyzed the proportion of shared beliefs that were positive and negative.

A one-way ANOVA yielded a significant relationship between business unit membership and the proportion of shared positive beliefs (F = 9.99, d.f. = 3,34; $p < .001$) for beliefs related to the strategic significance of the initiative. In Table 2, Part C, we report the results of the post hoc comparisons of belief sharing between INFOSERVE and each of

TABLE 2
Belief Valence by Business Unit

A: Beliefs Regarding the Strategic Significance of INFOSERVE

	Business Units			
Valence of Beliefs	INFOSERVE (n = 12)	Dominant Unit (n = 11)	Neutral Unit (n = 8)	Rival Unit (n = 8)
Proportion of beliefs that are positive	.98	.69**	.87	.29***
Proportion of beliefs that are negative	.02	.31**	.13	.71***

B: Beliefs Regarding the Critical Issues and Success Factors Facing INFOSERVE

Valence of Beliefs	INFOSERVE (n = 12)	Dominant Unit (n = 11)	Neutral Unit (n = 8)	Rival Unit (n = 8)
Proportion of beliefs that are positive	.11	.28**	.05	.05
Proportion of beliefs that are negative	.54	.51	.38	.79*

C: Shared Beliefs Regarding the Strategic Significance of INFOSERVE

Valence of Beliefs	INFOSERVE (n = 12)	Dominant Unit (n = 11)	Neutral Unit (n = 7)	Rival Unit (n = 8)
Proportion of shared beliefs—positive	1.00	.68**	.84	.34***
Proportion of shared beliefs—negative	.00	.32**	.16	.66***

D: Shared Beliefs Regarding the Critical Issues and Success Factors Facing INFOSERVE

Valence of Beliefs	INFOSERVE (n = 12)	Dominant Unit (n = 11)	Neutral Unit (n = 7)	Rival Unit (n = 8)
Proportion of shared beliefs—positive	.15	.25*	.05	.05*
Proportion of shared beliefs—negative	.41	.39	.29	.74***

*$p \leq$ 05.
**$p \leq .01$.
***$p \leq .001$.

Notes: Data entries reflect the total number of times a positive (negative) belief was mentioned by managers within a particular business unit divided by the total number of beliefs (including neutral beliefs, where relevant) elicited by managers who were members of that unit. The shared belief data entries reflect the total number of positive beliefs that was shared by managers within a business unit divided by the total number of beliefs that was shared by managers within that unit. Post hoc analysis (least significant difference test) reflects comparisons of each business unit to INFOSERVE only.

the other business units. These comparisons reveal that INFOSERVE members shared a significantly higher proportion of positive beliefs than the members of the dominant business unit and the rival business unit did. Note again that the members of INFOSERVE were the most positive, whereas managers from the rival business unit tended to be the least positive.

A similar pattern emerged for factors that would impede or facilitate the success of INFOSERVE's Internet strategy. A repeated-measures ANOVA revealed a significant shared belief valence × business unit interaction (F = 8.54, d.f. = 3,33; $p < .001$). In line with the analysis of strategic significance–related beliefs, observe in Table 2, Part D, that the INFOSERVE managers shared a greater proportion of positive beliefs and a smaller proportion of negative beliefs than those in the rival business unit. In contrast to the strategic significance results, executives in the dominant business unit shared a greater proportion of positive beliefs than INFOSERVE managers did. Overall, managers, including INFOSERVE executives, shared a greater proportion of negative (versus positive) beliefs (F = 62.25, d.f. = 1,35; $p < .001$).

Belief category. We now turn our attention to the contrasting perspectives held by business unit executives regarding the strategic significance of INFOSERVE's online initiative as well as the factors that would shape the initiative's success (failure) when INFOSERVE owned the market charter. Table 3 presents the one-way (business unit) ANOVA results and post hoc comparisons that analyze the average number of beliefs managers elicited for each of the belief categories related to the strategic significance of the initiative (Part A) and the critical issues and success factors (Part B), respectively.

Strategic significance-related beliefs. Overall, when executives considered the strategic significance of developing an Internet strategy, they viewed the Internet as an attractive new market for COMMCO and generally applauded the creation of a dedicated Internet market charter. Disagreement centered on INFOSERVE's particular approach to the Internet market. Note in Table 3, Part A, that significant differences across business units emerged regarding the goal of the online initiative ("strengthen relationships in the consumer market"), INFOSERVE's exclusive focus on the consumer versus the business market ("units divided over target market"), and the need to develop alternative Internet solutions within COMMCO ("opposing unit pursues separate initiative"). Analyses contrasting the beliefs of INFOSERVE with each of the other business units reveal the strongest differences with the rival business unit.

TABLE 3
Belief Categories by Business Unit

A: The Strategic Significance of INFOSERVE

		Business Units			
Belief Categories	F	INFOSERVE (n = 12)	Dominant Unit (n = 11)	Neutral Unit (n = 8)	Rival Unit (n = 8)
1. Entry into an attractive new market. (+)	1.25	.33	.73	.62	.25
2. A dedicated market charter. (+)	1.59	1.17	.91	1.12	.37*
3. Strengthen relationships in the consumer market. (+)	2.74*	2.67	2.09	1.37	.62**
4. Units divided over target market. (–)	7.02**	.00	.18	.00	1.00***
5. Opposing unit pursues separate initiative. (–)	3.35*	.25	1.09	.87	2.00**

B: Critical Issues and Success Factors

Belief Categories	F	INFOSERVE (n = 12)	Dominant Unit (n = 11)	Neutral Unit (n = 8)	Rival Unit (n = 8)
1. Lever for growth in consumer business. (+)	5.41**	1.33	2.64*	.57	.50
2. Formidable competitors. (–)	4.06**	1.17	.09**	.43	.37*
3. Level of resource commitment. (=)	4.71**	2.08	.54**	2.00	.25**
4. Units divided over target market. (–)	6.21**	.92	.27	.62	3.12**
5. Relative size of INFOSERVE unit. (–)	1.50	1.08	.27	.43	.25
6. Cross-unit collaboration. (–)	5.93**	.17	2.00***	.14	.50
7. Implementation by INFOSERVE unit. (–)	3.95*	2.42	.45**	.00**	.37*
8. Credibility of INFOSERVE's leadership. (–)	1.36	.33	1.81*	.86	1.00
9. Rigid boundaries at COMMCO. (–)	.09	.92	1.00	1.29	1.00
10. Dynamic new industry. (=)	.30	2.00	1.64	2.12	1.50

$^{*}p \le .05$.
$^{**}p \le .01$.
$^{***}p \le .001$.
Notes: Data entries reflect the total number of times a belief in a specific category was mentioned by managers within a particular business unit, divided by the total number of managers who were members of that business unit. Post hoc analysis (least significant difference test) reflects comparisons of each business unit to INFOSERVE only.

To INFOSERVE managers, the strategic significance of the online initiative is to strengthen the loyalty bond that consumers feel toward COMMCO. One INFOSERVE executive stated, "I think we will capture customers for the online INFOSERVE business. My hope is that customers signed up with [the dominant business unit service offering] would have less reason to leave COMMCO and go to a competitor's firm." INFOSERVE executives viewed the online venture as enhancing COMMCO's presence in the consumer (versus business) market.

In contrast, rival business unit managers contended that INFOSERVE's exclusive focus on the consumer market was "all wrong." Noting the growth of the work-at-home market segment, the rivals suggested that the distinction between the consumer market and business market had become "a very fuzzy boundary for people." As one rival business unit executive stated, "The model is so broken. Chat service is very consumer oriented. Going online for information is very business oriented. Paying for it is a business proposition. People may want to do both." Frustrated with the exclusion of all business market considerations from INFOSERVE's online initiative, the rival business unit, more than any other unit, was a strong advocate for developing alternative online offerings within COMMCO.

Critical issues and success factors. Despite some agreement on the forces that would facilitate (hinder) the success of the INFOSERVE initiative (e.g., rigid boundaries within COMMCO), managers were largely divided on the issues they considered most critical to the future of the Internet strategy. Observe in Table 3, Part B, that significant differences across business units emerged regarding the link to the core business ("lever for growth in the consumer business"), the competition ("formidable competitors"), resources ("level of resource commitment"), the target market ("units divided over target market"), communication across units ("cross-unit collaboration"), and INFOSERVE's internal operations ("implementation by INFOSERVE unit").

Compared with other managers, INFOSERVE executives centered on three issues: formidable competitors, the level of resource commitment, and implementation by INFOSERVE unit. As an illustration, INFOSERVE, more than the dominant and rival business units, perceived the late entrance into an already crowded Internet market space as an important barrier to its success. For example, an INFOSERVE executive noted, "I am afraid of XYZ Co. [a pseudonym]. They are very, very rich; a very, very successful organization.... When that organization decides that they want to capture a business, they will invest quite heavily in that business." Although INFOSERVE managers clearly wanted their initiative to succeed, the daily challenges that confronted them dampened the prospects for their own success.

In contrast to INFOSERVE executives, managers from the dominant business unit identified lever for growth in consumer business and cross-unit collaboration as the key issues that determine the success of the online initiative. To dominant business unit executives, the strategic connection between INFOSERVE's initiative and COMMCO's core business would support and facilitate the success of the Internet strategy. One dominant business unit manager noted, "What's going to make [INFOSERVE] ultimately successful is the extent that they really find a way to be of value to the consumer franchise—draw on our expertise and combine it with their knowledge of the market.... That's what will make them and us more effective." However, the dominant business unit managers were surprised that the INFOSERVE unit was developing the Internet strategy in isolation and failed to tap their well-honed marketing skills. Overall, however, given their enthusiasm for the link between INFOSERVE's Internet strategy and the core business, managers from the dominant business unit were most optimistic about the initiative's success.

Consistent with our findings on strategic significance–related beliefs, managers from the rival business unit isolated one issue—units divided over target market—as their key concern. Except for implementation by the INFOSERVE unit, the beliefs of neutral business unit managers did not differ significantly from the critical issues and success factors that were raised by INFOSERVE managers (see Table 3, Part B).

Phase 2 Results: Effects of Initial Business Unit Assignments on Identification, Beliefs, and Tie Strength

In Phase 2, data were collected four months after the Internet charter and INFOSERVE managers were transferred to the dominant business unit. This provided an opportunity to examine the impact of the former organizational structure on managers' business unit identity, beliefs, and social ties. In H_2, we propose that despite charter change and the resulting structural realignment, the former organizational structure will continue to guide the identity, beliefs, and pattern of social ties among the relevant set of managers identified in Phase 1.

Strength of identification. In line with H_{2a}, managers' pattern of identification reflects the original (versus realigned) organizational structure. To examine this hypothesis, we measured how strongly each manager identified with (1) the INFOSERVE initiative, (2) their current business unit, and (3) COMMCO as a whole. Using the strength of identification as a within-subjects factor, an ANOVA revealed a significant strength of identification × business unit interaction ($F = 19.23$, d.f. = 3,24; $p < .001$). In Table 4, Part A, we report the post hoc comparisons between the former INFOSERVE executives and members from each of the other business units. Observe in Table 4, Part A, that there are no significant differences between the members of the former INFOSERVE unit and the other business unit members on strength of identification with COMMCO as a whole. However, although the former INFOSERVE members identify less strongly with their (new) home business unit (dominant business unit) than the other members of the dominant business unit, they also identify more strongly with the former INFOSERVE initiative than other business unit members, especially those in the rival business unit. Thus, even four months after joining the dominant business unit, the identification patterns of INFOSERVE executives are consistent with the former (versus realigned) organizational structure.

Belief valence. Analysis of the valence of managers' means–end beliefs confirmed our expectations defined in H_{2b}. To test this hypothesis, we examined managers' average ratings of 11 positive means–end belief statements and 3

TABLE 4
Identity, Belief Valence, and Tie Strength by Business Unit

A: Identity[a]

Strength of Identification with	Business Units INFOSERVE (n = 11)	Dominant Unit (n = 7)	Neutral Unit (n = 7)	Rival Unit (n = 3)
INFOSERVE initiative	3.82	3.18	2.75**	1.83***
Home business unit	3.05	4.32**	4.54***	3.92
COMMCO	3.07	3.86	3.36	4.00

B: Means–End Beliefs[b]

Valence of Beliefs	INFOSERVE (n = 11)	Dominant Unit (n = 7)	Neutral Unit (n = 6)	Rival Unit (n = 3)
Mean rating—positive beliefs	3.75	3.18*	3.57	2.45***
Mean rating—negative beliefs	2.55	3.48**	3.33*	3.78**

C: Shared Means–End Beliefs[c]

Valence of Beliefs	INFOSERVE (n = 11)	Dominant Unit (n = 7)	Neutral Unit (n = 6)	Rival Unit (n = 3)
Proportion of shared beliefs—positive	.69	.46**	.66	.30***
Proportion of shared beliefs—negative	.03	.22*	.02	.40*

D. Tie Strength[d]

Tie Strength	INFOSERVE (n = 11)	Dominant Unit (n = 7)	Neutral Unit (n = 6)	Rival Unit (n = 3)
Proportion of ties—strong	.66	.24**	.56	.53
Proportion of ties—weak	.26	.60**	.33	.47

*$p \leq .05$.
**$p \leq .01$.
***$p \leq .001$.
[a] Data entries reflect the average scale rating across four five-point scales, where 1 = "strongly disagree" and 5 = "strongly agree."
[b] Data entries reflect the average scale rating across 11 positive and 3 negative means–end beliefs, respectively.
[c] Data entries reflect the total number of positive (negative) means–end beliefs divided by the total number of means–end beliefs (including neutral beliefs).
[d] Data entries reflect the number of strong (weak) ties that a manager had with the other members of the business unit divided by the total number of other members within the unit.
Notes: Post hoc comparisons (least significant difference test) involve INFOSERVE only.

negative means–end belief statements, respectively. Each means–end belief linked an INFOSERVE activity or action (means) to a specific outcome (end). A repeated-measures ANOVA, using belief valence as the repeated factor, uncovered a significant belief valence × business unit interaction ($F = 5.33$, d.f. = 3,23; $p < .007$). Note in Table 4, Part B, that the former INFOSERVE managers agreed more strongly with positive means–end beliefs about the Internet initiative than their counterparts in the dominant business unit and (especially) the rival business unit and less strongly with the negative means–end beliefs about the initiative than all other business unit members.

Belief sharing. Additional support for H_{2b} was found when the pattern of shared beliefs was analyzed. To test this hypothesis, we considered respondents' agreement with all 18 means–end belief statements (11 positive, 3 negative, 4 neutral). We first dichotomized the ratings of relationship strength or agreement with each means–end dyad. We assigned a 1 to ratings above the scale midpoint to indicate that a respondent held the particular means–end belief; a 0 indicated otherwise. Next, we constructed a respondent (i) by belief (j) matrix (A) and computed belief sharing using the same procedures outlined in the Phase 1 analysis of shared beliefs. As in the previous analysis, we examined the proportion of shared positive and negative beliefs to the total number of beliefs (including neutral means–end beliefs).

A repeated-measures ANOVA, in which the proportion of shared beliefs (positive, negative) was the repeated factor, revealed a significant shared belief valence × business unit interaction ($F = 5.59$, d.f. = 3.22; $p < .006$). Note in Table 4, Part C, that the former INFOSERVE managers share significantly more positive and fewer negative beliefs than their new colleagues in the dominant business unit and their counterparts in the rival business unit. Thus, despite the structural realignment, this pattern of shared beliefs reflects the old (versus new) organizational structure.

Pattern of social ties. Consistent with the effects of old structural lines on patterns of identification and belief sharing, we also expected the pattern of social ties within the organization to reflect the former (versus realigned) organizational structure. To begin, we dichotomized executives' ratings of every other manager on interaction frequency and personal closeness. A social tie between two managers was designated as strong (weak) if the average rating across the two seven-point scales was five or greater (less than five). Because the sample size varied across business units, we then computed the proportion (versus number) of strong and weak ties that were held by each manager. Specifically, we calculated the proportion of strong and weak ties by dividing the number of strong and weak ties that a manager had with the other members of the same business unit by the total number of other members within that unit.

Using a repeated-measures ANOVA with tie strength (strong, weak) as the repeated factor, we found a significant tie strength × business unit interaction (F = 4.17, d.f. = 3,23; $p < .02$). Table 4, Part D, presents the post hoc comparisons. Observe that the former managers of INFOSERVE have significantly more strong ties and fewer weak ties than members of the dominant business unit. Because the initiative relied on the contributions of managers across the dominant business unit, the online strategy could not be effectively implemented if INFOSERVE remained a self-contained group. Despite the reorganization, the pattern of social relationships among former INFOSERVE managers reflects the old (versus new) structural lines.

Influence beliefs. Consistent with H_{2b}, we expected that the former organizational structure would continue to shape the managers' beliefs regarding where influence resides in setting the course for COMMCO's Internet strategy. To test this hypothesis, we divided the managers into two groups: former INFOSERVE executives and non-INFOSERVE executives. Then, we examined the influence ratings of each in-group (e.g., INFOSERVE and non-INFOSERVE managers' ratings of themselves) and compared these ratings with the influence ratings of each out-group (e.g., INFOSERVE and non-INFOSERVE managers' ratings of each other). Higher ratings of the in-group and lower ratings of the out-group would indicate the lingering effect of the old (versus new) organizational structure on perceptions of influence.

A repeated-measures ANOVA, in which group type (in-group, out-group) was the repeated factor, revealed a significant group × business unit interaction (F = 6.20, d.f. = 1, 26; $p < .02$). Consistent with a pattern of in-group/out-group bias, both groups of managers rated themselves (the in-group) as significantly more influential in directing COMMCO's online strategies than their counterparts (the out-group) rated them. Specifically, INFOSERVE executives rated themselves as significantly more influential than the non-INFOSERVE managers rated them (M = 5.31 and M = 4.64, respectively). In contrast, non-INFOSERVE managers rated themselves as more influential than the INFOSERVE managers rated them (M = 3.04 and M = 2.75, respectively).

Mediating role of identity. Finally, in H_3, we predicted that the relationships between business unit membership and the key dependent variables (beliefs, pattern of social ties) would be mediated by a manager's strength of identification with the INFOSERVE initiative. To test this hypothesis, we used analysis of covariance in which a manager's strength of identification with the INFOSERVE initiative served as the covariate. Support for mediation would be provided if the significant relationship between the independent (e.g., business unit membership) and dependent (e.g., beliefs, pattern of social ties) variables is reduced through the introduction of the covariate (Batra and Ray 1986).

We found partial support for H_3. Specifically, identity partially mediated business unit membership's relationships with means–end beliefs ($F = 5.33$, $p < .007$, $\eta^2 = .41$ was reduced to $F = 3.05$, $p < .05$, $\eta^2 = .29$) and belief sharing ($F = 5.59$, $p < .006$, $\eta^2 = .43$ was reduced to $F = 3.53$, $p < .04$, $\eta^2 = .33$). Identity completely mediated the link between business unit membership and influence beliefs ($F = 6.20$, $p < .02$, $\eta^2 = .19$ was reduced to $F = 2.51$, $p > .10$, $\eta^2 = .10$). The mediating effect of identity on the relationship between business unit membership and the pattern of social ties was not significant. Identification with the current home business unit and with COMMCO as a whole did not mediate the key relationships of interest.

Epilogue

Information derived from a poststudy interview with a key member of the original INFOSERVE team and corporate press releases provide some closure to the Internet story at COMMCO. Shortly after Phase 2 data collection, the charter for the Internet market and the personnel who constituted the original INFOSERVE unit were reassigned again—this time to the rival unit. The dominant unit was locked in a heated competitive battle in COMMCO's core business, and the Internet market was not a vital concern. Meanwhile, the president of the rival unit, who was moving ahead with a separate Internet initiative for the business market, actively sought the market charter and won control of it. Two months later, the rival unit narrowed the Internet strategy focus and scrapped the original strategy plans that had been forged by the INFOSERVE unit. INFOSERVE's former president was reassigned and subsequently left COMMCO, as did several other members of the original INFOSERVE unit. Although certain proprietary services planned by INFOSERVE were dropped, COMMCO became an Internet service provider.

Discussion and Implications

Although prior studies have identified boundaries that divide managers who represent different functions (Dougherty 1992; Frankwick et al. 1994; Hutt, Walker, and Frankwick 1995), our results reveal the divergent pattern of strategy beliefs across business units. More important, our results suggest that the identity, beliefs, and social ties of managers may endure after a structural alignment, thereby hampering the development and implementation of marketing strategy.

Consistent with H_1, the beliefs of executives involved in the Internet strategy differed markedly across business units, and a distinct pattern of belief sharing was evident in each of the focal units. The greatest differences emerged between INFOSERVE and the rival and dominant business units. Our findings provide a vivid portrait of the thought-world differences that can divide the business unit leaders and therefore even the marketing managers who serve one prescribed market domain in the firm versus another. These results support Rosa and colleagues' (1999) conceptualization of product markets as knowledge structures that are shared by managers. Indeed, the executives who guided strategy for the established business units held opposing views regarding the course of the Internet strategy, and those beliefs were closely aligned with the traditional product markets they addressed for COMMCO: The rival business unit conceptualized the strategy in a business market context, whereas the dominant business unit envisioned a consumer market initiative. In dynamic markets, Rosa and colleagues (1999) argue that mature and rigid knowledge structures can hinder a firm's ability to adapt when environmental contingencies shift.

Central to our contribution are the findings that demonstrate the inertial forces that develop around the product markets served by business units. After the INFOSERVE unit was disbanded and its personnel and charter were reassigned to the dominant business unit, the social and cognitive linkages that united INFOSERVE managers in the old structure continued to endure. In support of H_2, the former organizational structure continued to guide the business unit identity, strategy beliefs, and social ties of managers. Though remaining a cohesive group—even after being physically dispersed—in the new structure, the former INFOSERVE executives failed to forge the ties that would be needed to integrate the Internet strategy into the dominant business unit's ongoing operations. Although interpersonal proximity tends to facilitate interaction and strengthen identification (Ashforth and Mael 1989), the bond that united INFOSERVE managers endured despite the physical separation of the team members. To our knowledge, this is the first study to isolate empirically the inertial forces that an established organizational structure can continue to impose on the identity, beliefs, and social ties of managers after a structural realignment. Moreover, partial support was found for H_3, which isolated identity as the primary contributor to the social and cognitive inertia within the firm. Fisher, Maltz, and Jaworski (1997) find that a strong relative functional identity inhibits cross-functional communications, and our study illustrates that a strong business unit identity can impede the knowledge flows that a freshly chartered business unit was created to capture.

Limitations

To put our findings in a proper perspective, we must consider some limitations of the study. First, exploring the charter for a strategic market initiative in one organization limits the generalizability of the results. For example, COMMCO possesses an organizational structure that could be characterized as competitive and rewards business unit leaders on the basis of unit versus company performance. Further research might examine the way different reward systems influence the nature of charter change and the performance of firms entering newly defined product markets. Moreover, further research might examine the structural and strategic processes that organizations employ to promote cross–business unit cooperation as the organization is realigned to capture emerging market opportunities. The challenge of securing access to multiple organizations, especially to proprietary decision processes regarding market entry, led us to a single-firm focus. However, our design incorporated a full complement of decision makers across units, including business unit presidents, marketing managers, and others. Although these business unit presidents were members of the senior leadership team, we were unsuccessful in securing the participation of the chief executive officer and chief financial officer.

Second, a more comprehensive portrait of charter change might be secured by exploring the different ways in which charters are assigned within organizations. COMMCO awarded the Internet charter to a newly created business unit, and top management made subsequent transfers of that charter to other business units. Some firms let internal competition for a charter flourish across business units, especially when there is uncertainty about how the market will evolve (Eisenhardt and Galunic 2000).

Third, our insights into the evolution of the Internet charter at COMMCO are based on depth interviews with managers and an associated questionnaire that explored means–end relationships and patterns of social ties. We did not have complete access to their thoughts or the patterns of influence that may have been operative during the study period. However, field studies of a major strategic market initiative that incorporate a longitudinal component and include a cadre of executive decision makers are rare, both in the marketing and general strategy literature. Above all, the study responds to the criticism lodged at marketing by strategic management researchers (e.g., Biggadike 1981; Prahalad 1995), who question the degree of prominence accorded to the served market construct in the discipline, and addresses the recommendations of marketing scholars for research that more fully explores the realities of strategic market decision making in the firm (Day 1992; Varadarajan and Jayachandran 1999; Workman 1993).

Implications for Managers

First, in creating a charter for a new product market, the fundamental task for strategists at the corporate level is to develop a strategy map for the newly chartered market with which organizational members can strongly identify. Providing a sense of direction to organizational members, the strategy map identifies a projected future goal as an impetus and guide for achieving some desired changes in structure, process, and performance. For example, Gioia and Thomas (1996) describe how the future goal of becoming a top-ten research university provided a powerful stimulus for corresponding changes in the structures, processes, and performance of an institution. Marketing assumes a focal role in the strategic dialogue that surrounds the creation of charters for new product markets by analyzing customer needs and the capabilities of existing and potential competitors and by developing the firm's overall value proposition (Webster 1997). For charter change, this is a challenging task, because organizational members (including marketing managers) residing in different business units may hold opposing views of the preferred strategy course and how it fits into the value proposition of the firm. In line with managers' structural positions and associated identity, the transcripts of interviews from our research indicate that managers from some business units, for example, were strong advocates for addressing the business market first and then using this as a pathway into the Internet market at the consumer level. Meanwhile, the INFOSERVE unit was devoting primary attention to developing a value proposition for the consumer market. These divergent views demonstrate the challenging task that corporate-level strategists confront when creating a charter for an important new market: Link or meld the identities of the various business units into the organization's emerging identity and new concept of strategy (Fiol 1991).

Second, the data from our study revealed a pattern of social ties that united members of the INFOSERVE unit but included few strong links to managers outside the unit. Because a rigid internal focus was adopted, progress with the initiative was hampered and the legitimacy of INFOSERVE as an autonomous unit was damaged. Members of a newly chartered business unit must forge important links to other units and actively communicate the value proposition and proposed strategy to internal constituents. Marketing managers assume a central role in these boundary-spanning activities that center on melding the views of top management; coordinating cross-unit work flows and obtaining feedback; and scanning the organization and the environment for ideas and information about the competition, the market, and the technology (Ancona and Caldwell 1992). By building a shared understanding of the strategic market initiative within the organization, the legitimacy of a new venture is established (Dutton 1993).

Third, our results demonstrate how the forces of structural inertia pose a threat to a firm's efforts to realign the organization to capture new product markets. Established business units, communication flows, and organizational routines shape an organization's activities in each of the product markets. A new unit, such as INFOSERVE, faces a formidable challenge in breaking the established order, drawing on the collective strength of the enterprise, and linking its strategy to overall corporate strategy. The study also provides a rare demonstration of the enduring impact of structural boundaries on the beliefs of managers. When a restructuring initiative moved the INFOSERVE unit to COMMCO's most influential business unit, the identity and communication problems that were evident in the old structure continued to persist in the new structure. Research suggests that firms can break the stranglehold of structural inertia only by creating cultures marked by extensive cross-unit communication and placing collaborative decisions with the managers of businesses or product lines who understand both short-term tactics and long-term vision (Brown and Eisenhardt 1998).

Fourth, at a more fundamental level, Webster (1997) argues that instead of centering on strategy–structure fit, organizations must instead center on developing a capability for responding to the changing environment. The executive leadership at COMMCO developed a vision for the Internet market, but rapidly changing customer demands, quickly shifting technologies, and unexpected moves by competitors immediately challenged that vision of the future. Research on successful and rapidly changing firms in the computer industry signals an alternative path that COMMCO might have followed (Brown and Eisenhardt 1997). Instead of investing in one version of the future, managers at these firms rely on experimentation, practice improvisation in new product development (Moorman and Minor 1998), and launch a series of low-cost probes across markets. These probes take the form of experimental products and services, strategic alliances with leading providers of complementary products, and regular meetings among managers that look to the future. These low-cost probes are valuable because they can be used to create options for the future, uncover threats, reveal the unexpected, and speed learning about new markets.

Implications for Researchers

By exploring the evolution of a charter for a new product market and the belief patterns that united and divided managers, we offer several implications for strategy research. First, fast-paced changes in customer needs and technologies, combined with a host of other environmental forces, spawn frequent structural changes in organizations. However, strategy research has given only limited attention to the question of "how firms move from one strategy-structure position to another" (Galunic and Eisenhardt 1994, p. 246). Research is needed on the alternative approaches that firms use in implementing charter changes and the performance consequences of those approaches. Moreover, some firms demonstrate a record of success in responding to rapidly changing market conditions, whereas others in the same industry do not. A comparison of firms that fit these contrasting profiles may yield valuable insights into market responsiveness.

Second, restructuring initiatives by large, diversified firms represent a clear move toward a greater degree of focus with respect to product–market–technology scope (Varadarajan 1992). For example, research suggests that the performance of firms that diversified into businesses requiring a highly skilled workforce was enhanced by a centralized multidivisional structure (Markides and Williamson 1996). In this structure, the corporate center exercises strategic and financial control over the divisions and intervenes in their operating decisions. Further research is needed to explore how alternative structural configurations inhibit or support the creation of new charters and the transfer of knowledge across business units.

Third, research might also examine the strategic decision processes that underlie the creation of market charters that fall outside the scope of a firm's current strategy. On the basis of a field study of the evolution of Intel's corporate strategy, Burgelman (1991) argues that such initiatives are most likely to emerge at a level in the organization at which managers are directly in contact with new technological developments and changes in market conditions. Through the interaction of various types of champions and top management, these autonomous initiatives may become part of the organization's strategy. A valuable and interesting line of inquiry might examine the relative performance of new market charters that emerged from top-down versus bottom-up processes. Alternatively, Christensen and Bower (1996) study the global disk drive industry and find that successful disruptive technologies were more likely to emerge when developed by an independent unit rather than within the mainstream organization. Projects tended to stall within the mainstream organization because "programs addressing the needs of the firms' most powerful customers always preempted resources from the disruption technologies" (Christensen and Bower 1996, p. 207). Research is needed to assist firms in choosing the appropriate structural fit for a new charter. Under what conditions should a charter for a new product market be located in a separate organizational unit or added to the market domain that an existing unit serves? Likewise, what steps can marketing managers take to integrate new market charters and personnel into an established business unit?

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Shikhar Sarin & Vijay Mahajan

The Effect of Reward Structures on the Performance of Cross-Functional Product Development Teams

This study examines the effect of reward structures on the performance of cross-functional product development teams. Results suggest that when it is easy to evaluate individual performances, position-based differential rewards lead to greater satisfaction. For long and complex projects, process-based rewards have a negative effect and outcome-based rewards have a positive effect on performance. For risky projects and highly competitive or relatively stable industries, a nonlinear and monotonically decreasing relationship exists between outcome-based rewards and product quality.

New product development (NPD) is critical for the renewal, survival, and success of organizations (Brown and Eisenhardt 1995; Wind and Mahajan 1997). To ensure success in the development of new products, marketing needs to have a significant influence; however, marketing often ends up playing a secondary role to engineering (Workman 1993). Greater coordination among functional areas is essential for successful NPD (Adler 1995; Olson, Walker, and Ruekert 1995; Wind and Mahajan 1997). Cross-functional teams have become an increasingly popular mechanism for achieving greater interfunctional integration and cooperation in the NPD process (Adler 1995; Griffin 1997; Olson, Walker, and Ruekert 1995; Pascarella 1997; Wind and Mahajan 1997).

Reward structures have been identified as one of the most important determinants of interfunctional integration among organizational employees and units (Coombs and Gomez-Mejia 1991). The use of rewards as a means of controlling, managing, and enhancing performance has been well established in marketing, especially in the areas of distribution channels (e.g., Gundlach and Cadotte 1994), sales force management (e.g., Ingram and Bellenger 1983), and organizational buying behavior (e.g., Anderson and Chambers 1985). In this article, we extend this line of inquiry to include another vital function of marketing—NPD.

We examine how reward structures affect the performance of cross-functional product development teams (CFPDTs). Performance of CFPDTs is measured in terms of speed to market, level of innovation, product quality, adherence to budget and schedule, and market performance (among others)—variables that have long been the focus of marketing literature (for some recent examples, see Olson, Walker, and Ruekert 1995; Workman 1993). In their introduction to *Journal of Marketing Research*'s *Special Issue on Innovation and New Products*, Wind and Mahajan (1997) identify speed to market, innovation, and product quality as among the most critical issues facing NPD in marketing. Our study draws attention to the unexplored area of reward structures, which can have a significant influence on these NPD outcomes.

Even small changes in the reward and evaluation structures of CFPDTs may lead to relatively large payoffs for NPD performance (Feldman 1996). Despite its obvious potential impact, examination of this topic by either academic researchers or organizations remains sparse (Griffin 1997). As such, an examination of the effect of reward structures on CFPDT performance presents an intriguing problem from both theoretical and managerial perspectives.

Organizational reward and evaluation structures have not kept pace with the changes in the work environment (Wallace 1987). Robbins and Finley (1995) contend that outdated reward structures are a common reason teams fail in organizations. They note that rewards and evaluations are still functionally determined: Teams and individual members are often rewarded for the wrong things. Many articles in the popular business press have also commented on the pervasiveness and complexity of this problem:

> Building cross-functional teams can work wonders in developing new products, but only if people are rewarded as members of a team.... That's one reason why most teams fail to produce. (*BusinessWeek* 1995, p. 154)

> [In order to succeed in streamlining and flattening their structure,] organizations must change the appraisal and pay systems to reward team results, not just individual performance. (Byrne 1993, p. 78)

> When it comes to paying teams, managers still throw up their hand-held computers in despair. Pay the team as a group? Then won't your star performers feel slighted? Pay for individual performance? What does that do to encourage teamwork? (Dumaine 1994, p. 87)

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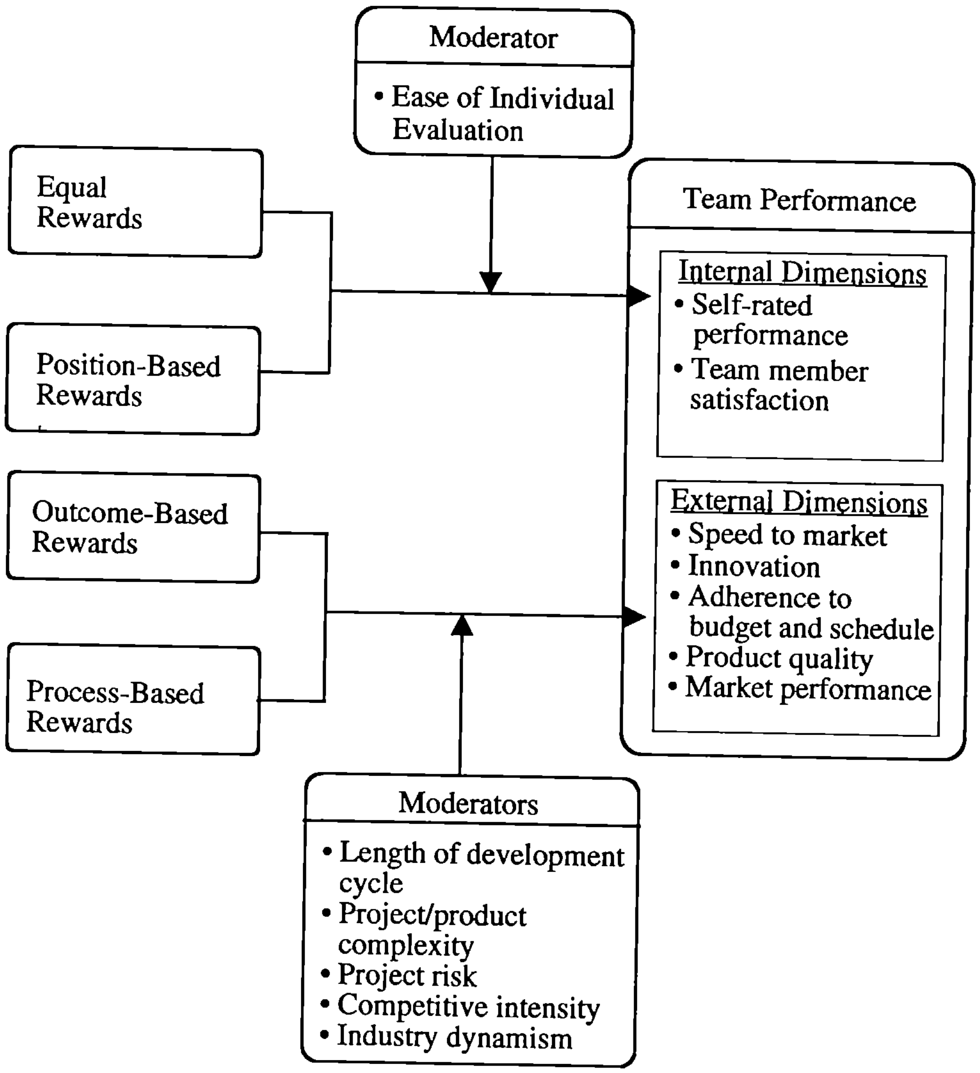
Pascarella (1997) notes that two major questions confront organizations that actively use CFPDTs: *how* and *when* to reward such teams. Field interviews conducted during this study confirm that managers struggle with two issues pertaining to CFPDT rewards: how to distribute rewards among team members and on what criteria the team rewards should be based. Rewards can be distributed among team members equally or on the basis of the position/status enjoyed by the individual members in the organization. Similarly, teams can be rewarded on the basis of the outcome produced by them or for adhering to a certain process.

Existing literature suggests that instead of representing end points of two continuums, equal/position-based rewards and process-/outcome-based rewards constitute four distinct constructs (e.g., Jaworski 1988; Steers and Porter 1991). In this exploratory study, we examine the effect of these four reward structures on the performance of CFPDTs and propose a midrange theory in a new domain. To our knowledge, this is one of the first studies that uses industry data to examine empirically the effect of reward structures on CFPDT performance. Team performance is measured along multiple dimensions that vary from speed to market to team member satisfaction (broadly classified as internal and external team performance dimensions). In Figure 1, we outline the conceptual framework developed and tested in this study. This framework addresses the following research questions:

1. How are the internal performance dimensions of CFPDTs (i.e., team member satisfaction and self-rated performance) affected by equal and position-based distribution of rewards among team members? Under what conditions should rewards be distributed equally among the team members? When should rewards be distributed on the basis of the position/status of the team member in the organization?
2. How are the external performance dimensions of CFPDTs (i.e., speed to market, level of innovation, adherence to budget and schedule, product quality, and market performance) affected by rewards that are linked to the NPD process versus the outcome produced by the team? Under what conditions should team rewards be linked to the outcome as opposed to the process of product development?

FIGURE 1
The Effect of Equal/Position Rewards and Outcome-/Process-Based Rewards on Team Performance



Conceptual Development and Hypotheses

Reviews of both academic and popular business literature reveal little to guide managerial decision making on rewarding CFPDTs. Some researchers (e.g., Deschamps and Nayak 1995; Parker 1994; Robbins and Finley 1995) have alluded to the topic; however, their treatment is based more on experience and case studies than on empirical data. Other studies (e.g., Gladstein 1984; Thamhain 1990; Wageman 1995) have addressed group rewards tangentially. Although some recent attempts (Faure and Weitz 1993; Walker, Ruekert, and Olson 1992) directly address this issue, the literature still lacks a comprehensive examination of team rewards (Griffin 1997; Olson, Walker, and Ruekert 1995).

A lack of theory in the area of team rewards is further complicated by our observations that no mechanisms of rewarding CFPDTs appear to be consistently effective in the field. Furthermore, little empirical data are available to support the strategies recommended in the popular business press. In the absence of a well-defined stream of research on a topic, a qualitative, practitioner-oriented approach to theory development is recommended (Kohli and Jaworski 1990; Zaltman, LeMasters, and Heffring 1982). Therefore, we conducted extensive qualitative interviews to develop the conceptual framework presented in Figure 1.

Over 18 months, qualitative data were collected in 37 interviews with 57 individuals. These individuals were drawn from a cross-section of functional backgrounds and hierarchical levels and were involved in the NPD process. They included representatives from 26 different CFPDTs and executives involved in product development at nine medium-sized to large organizations. The data collected during this phase were used to establish the external validity of the conceptual framework, generate preliminary hypotheses and scale items, and pretest the survey instrument used during the second phase of data collection.

Initial field interviews indicated that the reward and evaluations structures that resulted in positive outcomes in one team had a negative effect on others, suggesting the influence of contextual variables. Although discerning patterns proved difficult, three consistencies emerged from our interviews:

- *When* teams are rewarded, that is, the timing of rewards, had a significant impact on team performance (i.e., process- and outcome-based rewards).
- Team performance was also affected by *how* the rewards were distributed among the members of the team (i.e., equal and position-based rewards).
- The effects of these reward structures were contextual and depended on the characteristics of the project and industry under consideration.

The moderating influence of some project- and industry-specific variables, such as project/product complexity and industry dynamism, was suggested by previous studies as well (e.g., Gladstein 1984; Pascarella 1997). We incorporated these qualitative data into the conceptual framework before commencing the second phase of data collection using a survey instrument.

Team Performance

Performance of CFPDT is a multidimensional construct. It implies different things to different people under different contexts. Shea and Guzzo (1987) suggest that multiple measures should be used to evaluate team performance. In this study, the performance of CFPDTs is disaggregated and measured along seven underlying dimensions, broadly classified along external and internal criteria. External performance criteria are largely market based, and internal criteria are more pertinent to the team/organization.

Five external performance dimensions were considered, three of which were previously identified in the literature: (1) speed to market, a relative measure of time taken to launch a product; (2) adherence to budget and schedule; and (3) level of innovation, the degree of newness of the product (Ancona and Caldwell 1991, 1992a; Olson, Walker, and Ruekert 1995; Walker, Ruekert, and Olson 1992). Our interviews, as well as recent studies, suggested the inclusion of two additional external performance dimensions: (4) product quality, measured in terms of customer satisfaction, product reliability, number of product-related complaints, and warranty and repair costs (Meyer 1994; Olson, Walker, and Ruekert 1995); and (5) market performance, postintroduction performance of the product relative to expectation and competition (Meyer 1994).

Teams were also evaluated along two internal performance dimensions: (1) self-rated team performance, a measure of the team's performance compared with other NPD teams in the organization (Ancona and Caldwell 1991, 1992a); and team member satisfaction, the degree to which association with the team is considered a worthwhile, productive, and satisfying experience by team members (Meyer 1994; Pinto, Pinto, and Prescott 1993; Warr, Cook, and Wall 1979). The distribution of rewards is expected to influence the internal dimensions of team performance significantly, and the basis on which teams are rewarded is expected to be more germane to the external dimensions of team performance.

Relationship Between Equal and Position-Based Rewards and Internal Dimensions of Team Performance

Deutsch (1968) examines cooperation and competition in workgroups and suggests that in cooperative situations members enjoy relatively equal standing with respect to an outcome/objective, whereas in competitive situations their standing may be different. On the basis of this argument, two dimensions of reward structure were identified as they related to the distribution of rewards among the team members: *Equal rewards* are defined as the degree to which rewards are distributed evenly among team members, and *position-based rewards* are defined as the degree to which rewards are distributed among team members on the basis of their position/status in the organization.

Some researchers argue that team members should be rewarded as a unit because differential rewards are inherently inconsistent with the team concept (*BusinessWeek* 1995, p. 154; Parker 1994). Others suggest that the decision whether to reward team members equally or differentially should be based on the degree to which the team members are dependent on one another for the performance of their tasks (Deutsch 1968; Faure and Weitz 1993; Wageman 1995). The general consensus among these researchers is that equal rewards are more appropriate when the level of task interdependence is high. However, our field interviews suggested that it is not task interdependence per se but the ease with which individual performance can be identified and evaluated that should determine the manner of reward distribution. Implicit in the task interdependence argument is the assumption that individual contributions will be difficult to evaluate in highly interdependent tasks.

Consistent with the observation of some researchers (e.g., Parker 1994; Pascarella 1997), our interviews indicated that even in highly interdependent NPD projects, the efforts, responsibilities, or contributions of one or more members stood out. When interviewed alongside other team members, these star performers expressed no desire for extra recognition or rewards. However, when interviewed separately, they expressed a yearning for some extra recognition or reward that acknowledged their above-average contributions. Such conflicting feedback suggested that the issue of differential versus equal reward distribution was a complex one, in which true desires may be concealed because of peer pressure to be perceived as a team player.

Desire for personal recognition is consistent with individualism, a fundamentally Western/U.S. cultural value (Nahavandi and Aranda 1994). Qualitative data indicate that in an inherently collective (team) situation, this tendency, though suppressed, still persists. Harder (1992) discovered that underrewarding can lead to selfish and less-cooperative behavior in an interdependent group with a common goal. Therefore, when contributions are obvious or easy to evaluate, organizations may be well advised to recognize extraordinary individual effort, or they will risk losing their star performers (Zenger 1992).

However, contributions to the team should not be determined on the basis of effort alone. Even though members of a CFPDT have joint responsibility and joint accountability, the responsibility and risk shared by different members are not always equal. The amount of risk and responsibility shouldered by each member depends on his or her seniority, position in the organization, and role on the team. Wallace (1988) argues that the distribution of rewards should be structured to reflect the different levels of risk and responsibility assumed by each member. We consider contributions to the team to include the effort, risk, and responsibility assumed by each team member.

The need to reward individuals differentially in a group/team setting can also be argued from organizational justice and fairness perspectives. Distributive justice relates to individuals' perception of whether they are receiving a fair share of the available rewards—proportionately to their contribution to the group (Baron and Byrne 1997). Equity theory pertains to fairness in social exchanges and distributive justice, whereby individuals compare the ratio of their own rewards and contributions (to a group) to those of other individuals in the group (Adams 1965; Greenberg 1993).

Cropanzano and Randall (1993) note that perceptions of injustice (rewards being low in proportion to an individual's contribution) or inequity (in the distribution of rewards among individuals) can result in dissatisfaction, lower motivation, and even dysfunctional behavior. They suggest that equity and distributive justice should be taken into consideration, especially when dealing with people from individualistic cultures or when the emphasis is on maximizing group performance. Parker (1994, p. 134) summarized this argument as follows:

> [In addition to bringing the rewards down to the team level,] we still need to recognize team members who are outstanding team players—people who go beyond what is required and those who make an outstanding individual contribution to a team.

Many researchers have criticized the notion that team members need to be individually (differentially) recognized and rewarded, as doing so would be inconsistent with a team-based approach. Donnellon and Scully (1994) argue that differential rewards or individual recognition takes too narrow and dim a view of human nature. Furthermore, unequal reward distribution under interdependent conditions may undermine cooperation and increase competition within the team, lowering overall group productivity (Baron and Cook 1992; Deutsch 1968). This line of reasoning notwithstanding, support in favor of individual recognition in addition to team rewards remains strong (e.g., Deschamps and Nayak 1995; Parker 1994; Pascarella 1997; Robbins and Finley 1995).

Conflicting evidence presented by both qualitative field interviews and relevant theories compels us to examine competing viewpoints. Therefore, we propose and test alternative hypotheses in this study with the intention of reducing the contradictions in the literature. The discussion so far suggests that position-based differential rewards could be used when outstanding individual contribution is apparent to most members of the team (Pascarella 1997). This leads us to propose the following set of alternative hypotheses:

H_1: When the ease of individual evaluation is high, a position-based reward structure will be positively related to internal dimensions of CFPDT performance.

$H_{1(alt)}$: When the ease of individual evaluation is high, a position-based reward structure will be negatively related to internal dimensions of CFPDT performance.

When the cost and effort required to monitor individual contributions in a team is high, organizations are likely to share rewards (Alchian and Demsetz 1972). Therefore, when evaluating individual performance in a group setting is difficult, an equal reward structure is expected to be more effective. Procedural justice suggests that people are also sensitive to the fairness of the procedures used to distribute rewards among group members (Cropanzano and Randall 1993). People make a clear distinction between equity (the perception that the members' rewards are proportional to their contribution to the group) and procedural justice (the perception that fair and just procedures are followed to distribute rewards within a group) (Baron and Byrne 1997). Any perception of unfairness in the procedure can affect people's satisfaction with the rewards (Cropanzano and Randall 1993). Baker, Jensen, and Murphy (1988, p. 608) note that "Biased and inaccurate performance evaluation reduces productivity by reducing the effectiveness of incentives in organizations."

Therefore, when the ease of individual evaluation is low, a perception of unfairness may persist in the distribution of rewards. Such a perception may be hard to dislodge and could lead to dissatisfaction and lower morale and performance, regardless of how the rewards are distributed within the team (Cropanzano and Randall 1993). Therefore, we propose the following set of alternative hypotheses:

H_2: When the ease of individual evaluation is low, an equal reward structure will be positively related to internal dimensions of CFPDT performance.

$H_{2(alt)}$: When the ease of individual evaluation is low, an equal reward structure will be negatively related to internal dimensions of CFPDT performance.

Relationship Between Process- and Outcome-Based Rewards and External Dimensions of Team Performance

The dimensions of process- and outcome-based rewards are derived from the organizational control literature, which describes control as a process of monitoring and evaluating behaviors and outcomes (Eisenhardt 1985; Ouchi and Maguire 1975). Rewards and punishments are logical extensions of the control process, following monitoring and evaluation. Jaworski (1988) identifies several types of formal and informal controls. Two formal control mechanisms, process and outcome controls, are considered relevant to this study. Process controls are exercised *during* the execution of a task; output controls are exercised *after* a task is completed. Analogous to these two kinds of controls, *process-based rewards* are defined as the degree to which team rewards are tied to procedures, behaviors, or other means of achieving desired outcomes (i.e., completion of certain phases in the development process) (Deschamps and Nayak 1995). *Outcome-based rewards* are defined as the degree to which team rewards are tied to the bottom-line profitability of the project.

Although the relationship between organizational control and overall team performance has been examined (Henderson and Lee 1992; Walker, Ruekert, and Olson 1992), little is known about (1) how external dimensions of team performance are affected by linking team rewards to either process- or outcome-based measures and (2) how various product and industry characteristics affect the relationship between external dimensions of team performance and process-/outcome-based rewards. Process- and outcome-based controls can be used simultaneously (Merchant 1985), and researchers have argued that each can positively affect team performance (Henderson and Lee 1992; Walker, Ruekert, and Olson 1992). Our field interviews suggest that the effect of process- and outcome-based rewards is more complicated than anticipated. Process- and outcome-based rewards appear to have opposite effects, and their effect on performance is moderated by several factors.

For products with long development cycles, the team must stay motivated over the course of the development process. Such teams have a greater probability of turnover in their membership. During interviews, members of these teams reported less tolerance for delaying gratification (rewards) until the market performance of the product was evident. Under such conditions, output controls may be ineffective or even counterproductive (Hopwood 1972). Consistent with Parker's (1994) work, our qualitative data suggest that for long projects a process-based reward system focused on meeting procedural milestones (such as completion of specific phases) may be more effective.

However, the organizational control literature associates several potential disadvantages with process-based criteria for evaluating performance. Process-based criteria could make people dependent on the process itself, thus making them inert and resistant to change (Merchant 1985). Emphasizing process over outcome could promote risk-averse behavior (Cardinal 1990) and lower motivation and satisfaction (Hackman and Oldham 1976). This discussion suggests the following alternative hypotheses:

H_3: For products with long development cycles, a process-based reward system will be positively related to external dimensions of CFPDT performance.

$H_{3(alt)}$: For products with long development cycles, a process-based reward system will be negatively related to external dimensions of CFPDT performance.

Similarly, organizations may need to exercise greater control over planning, monitoring, and scheduling the development of complex products (Benghozi 1990). This is more easily achieved if the reward and control mechanisms are linked to process-based measures, because doing so ensures that minimum acceptable standards of quality are met and satisfied. Process-based controls and rewards help ensure predictability in behaviors, activities, and procedures deemed critical to success (Cardinal 1990). However, process-based control structures also restrict opportunities for achievement by discouraging creativity, innovation, and flexibility (Merchant 1985). Therefore, process-based rewards are expected to encourage team members to focus on the procedures required to produce the desired outcome rather than on the outcome itself. In such a situation, teams are likely to have a much lower stake in the success of the product, and most of the risk associated with developing the product is transferred to the organization. This discussion suggests the following alternative hypotheses:

H_4: For highly complex products, a process-based reward system will be positively related to external dimensions of CFPDT performance.

$H_{4(alt)}$: For highly complex products, a process-based reward system will be negatively related to external dimensions of CFPDT performance.

As a semiautonomous unit, the team acts as an agent of the organization with a mandate to develop a particular product. As such, agency theory (Bergen, Dutta, and Walker 1992; Eisenhardt 1985, 1989) can be used to design suitable reward structures for CFPDTs, as has been done for other professionals employed by organizations (Bloom and Milkovitch 1998). Agency theory makes the fundamental assumptions that both the agent and the principal are rational and self-interested and the agent is both effort- and risk-averse (Bloom and Milkovitch 1998). This creates a moral hazard, in which the agent (CFPDT) tends to maximize its compensation without exerting the effort required to maximize the principal's (organization's) goals (Baiman 1990; Bergen, Dutta, and Walker 1992; Bloom and Milkovitch 1998; Eisenhardt 1989).

Consequently, when dealing with agents, organizations prefer outcome-based reward and evaluation criteria, because they minimize the organization's risk by ensuring that the desired output is obtained (Eisenhardt 1989).

Agents, in contrast, prefer process-based reward and evaluation criteria, because this minimizes the agent's risk by ensuring it of compensation regardless of the project outcome. Baiman (1990) suggests that organizations should balance their use of outcome-based rewards so that the rewards motivate the agents to act in the organization's best interest.

Bloom and Milkovitch (1998) posit that such a balance addresses the inherent conflict of interest between the agent and the organization and is likely to result in an optimal reward structure as long as an undue amount of risk is not passed on to either party. They further note that though classical agency theory places equal emphasis on both the risk- and effort-averse nature of the agent, much prior research has overlooked risk considerations, concentrating mainly on the effort aversiveness of the agent. Consideration of risk is an essential element in the selection of an appropriate reward structure, because risk and reward jointly affect performance. Therefore, balancing incentives and risk sharing may be essential in designing reward structures for achieving optimal performance (Bloom and Milkovitch 1998; Eisenhardt 1989).

Risk has been defined in terms of uncertainty about future events/outcomes and the magnitude of failure (March and Shapira 1987). For CFPDTs, risk can arise from the nature of the project itself (i.e., product/project risk) or from the larger environmental conditions existing in the industry (i.e., industry dynamism and competitive intensity). When dealing with risky products or highly dynamic industries, CFPDTs face considerable uncertainty about future outcomes. For teams in highly competitive and dynamic industries, the cost of failure is very high. Under each of these conditions, both the organization (principal) and the team (agent) tend to minimize their own risks. Sharing risk provides an optimal way to maintain autonomy and accountability without sacrificing objectives of either the team or the organization. A purely outcome-based reward structure is likely to be counterproductive in these cases, because it places an excessive amount of risk on the CFPDT. In contrast, disconnecting the rewards from project outcomes not only forces the organization to absorb a disproportionate amount of the risk but also fails to motivate the team.

When environmental, technological, or organizational factors obscure the measurement of output or hinder output performance, purely output-based controls can be ineffective (Hopwood 1972). Similar impediments and ambiguities are likely when the industry is highly competitive or turbulent. Agency theory suggests that under such conditions, linking reward structure to the outcomes to a moderate degree should distribute the risk evenly between the team and the organization, resulting in an optimal (most effective) contract. For risky products, or when teams are operating in highly competitive or dynamic industries, an inverted-U-shaped relationship is likely to exist between outcome-based rewards and the external team performance dimensions. Performance is expected to be highest for moderate levels of outcome-based reward structures and is likely to suffer if rewards are completely dependent on or independent of the outcomes. Therefore, we hypothesize the following:

H_5: For highly risky products, an inverted-U-shaped relationship exists between outcome-based rewards and external dimensions of CFPDT performance.

H_6: For highly competitive industries, an inverted-U–shaped relationship exists between outcome-based rewards and external dimensions of CFPDT performance.

H_7: For highly dynamic industries, an inverted-U–shaped relationship exists between outcome-based rewards and external dimensions of CFPDT performance.

Methodology

Study Context and Sample Selection

High-tech industries were chosen as the context for this research study because of their extensive experience in using cross-functional teams in the NPD process (e.g., Ancona and Caldwell 1992a, b; Henderson and Lee 1992). Several *Fortune*-1000 and medium-sized companies (annual revenues ranging from $100 million to $1 billion) were invited to participate in this study through personal contacts and executive and faculty referrals. Nine of these organizations agreed to participate in Phase 1 of the study, which involved in-depth interviews with team members and managers. In Phase 2 of the study, a survey instrument was administered to a larger sample comprising respondents from six organizations. Four of these six organizations were drawn from the original nine organizations that participated in Phase 1. Five organizations dropped out of the study after Phase 1 of data collection, citing the sensitive nature of the information sought or a lack of time.

Three criteria were used to screen teams for both the interviews and the survey:

1. The team should be strictly intraorganizational.
2. The product being developed by the team should be intended for the open (competitive) market.
3. Teams should have either introduced their product within the past 12 months or have an ongoing project at an advanced stage of development.

The first criterion was needed to avoid contamination of the data due to spurious variance caused by interorganizational factors. The second criterion was adopted because market performance would be irrelevant for products destined for in-house use. Third, products older than one year were excluded to avoid problems with recall and take into account the typically high turnover in high-tech organizations. Each organization was asked to provide teams that varied along the following product-market dimensions: level of competitive intensity, level of product innovation, project risk, duration of product development cycle, and degree of success of the product.

Measure Development and Pretesting

Wherever possible, established scales were used to measure the constructs in this study. However, for some constructs (e.g., process- and outcome-based rewards), new measures were adapted from existing scales. For others (e.g., product quality), field interviews were used to generate a pool of items, which was then used to develop new scales. The measures were pretested in three stages. First, we presented the survey instrument to four doctoral students who were trained in psychometric theory and experienced in survey development. They were asked to fill out the preliminary survey instrument and identify any ambiguous or irrelevant items. These items were dropped or modified in the second draft of the questionnaire.

In the second stage, we solicited feedback from six academic experts. All constructs were clearly defined and their item measures identified, so that the experts could critically evaluate the scale items and their ordering. They were also asked to identify items that failed to capture the construct and to suggest additional items that would capture the entire construct domain. Third, we administered the resulting draft to 16 members representing three teams from two separate organizations. In face-to-face interviews, they were asked to point out items or instructions they found confusing, irrelevant, or repetitive.

Data Collection

Data were collected in two phases: qualitative field interviews and survey administration. As discussed previously, the purpose of the initial qualitative interviews with 57 members of 26 teams was to refine the theoretical framework and develop the survey instrument. Next, a survey was administered to a larger sample of CFPDT members, and the resulting data were used to test our hypotheses empirically. Survey data were collected from 246 members of 65 teams, drawn from 13 divisions of 6 medium-sized to large organizations. The teams varied in size from 3 to 22 members, with an average of 7.8. By definition, these teams were temporary, having worked together for anywhere from 3 to 72 months.

Respondents were instructed to return the completed questionnaires directly to the researcher or to a key liaison in each organization. Instead of being distributed through a mass mailing, questionnaires were distributed to one or two organizations at a time to ensure a high response rate. Multiple respondents were requested on each team for a cross-section of opinion (Ancona and Caldwell 1992a; Henderson and Lee 1992; Olson, Walker, and Ruekert 1995). Each team leader was asked to forward the questionnaire to at least three members of the core team. For smaller teams, responses from a single key member were considered acceptable. The number of informants from each team varied from 1 to 13, with an average of 3.7. Respondents were asked to identify their functional backgrounds and status (i.e., team leader or member). Responses from team members who represented different functional areas and hierarchical levels were obtained.

Data from multiple (key) respondents on the same team were pooled and averaged to obtain an aggregate (team-level) response (Ancona and Caldwell 1992a; Olson, Walker, and Ruekert 1995). This method was preferred to using responses from all team members, because some teams had 20 or more members. Such an approach is consistent with that of Henderson and Lee (1992), who demonstrated the utility of administering surveys to multiple key respondents on each team. The level of convergence among the multiple respondents appears in Appendix A, which presents the low, high, and average standard deviations on each construct across the teams in the sample.

Scale Refinement

The reliability and validity of the measures in this study were established according to standard procedures recommended by Gerbing and Anderson (1988). First, we performed an exploratory factor analysis on each construct to investigate its unidimensionality and underlying factor structure. Items with significant cross-loadings (i.e., >.35) were deleted from the analysis until a single-factor solution was obtained. Exploratory factor analysis was also used to verify whether the reward structures examined in this study constituted opposite ends of two continuums or four distinct constructs. We present the results of this principal component analysis in Appendix B. A stable four-factor solution was obtained where factors corresponded to each of the rewards constructs used in the study.

Second, we used confirmatory factor analysis to establish the psychometric properties of the scales used to measure the constructs. The size of our sample (n = 65) precluded the use of confirmatory factor analysis on aggregate-level data (Anderson and Gerbing 1995; Hu and Bentler 1995). Therefore, we disaggregated data to the individual level to perform the confirmatory factor analyses.[1] We used procedures outlined by Venkatraman (1989) to establish the unidimensionality and convergent and discriminant validity of the constructs as well as the validity of the nomological network. All constructs either met or exceeded the recommended criteria deemed acceptable for the establishment of these psychometric properties. In two cases of convergent validity, adherence to budget and schedule and product quality, the Bentler–Bonett Index values (Δ) of .89 were below the recommended level of .90. However, we considered these values acceptable because they were close to the recommended threshold (Venkatraman 1989).

A more encompassing and rigorous "all item–all construct" test of discriminant validity was also conducted using LISREL. A process analogous to the Lagrange-Multiplier test in EQS was followed (Schumacker and Lomax 1996). This test examined all underlying relationships between the 82 exogenous items measuring 16 endogenous constructs in the study.[2] Project length was excluded from this analysis because it was measured using a single objective item. The results of this test largely supported the discriminant validity of our measures. The modification indices show that of the 1230 nonhypothesized paths between the exogenous items and the endogenous constructs, 291 paths had chi-square values greater than 3.84 (degrees of freedom = 1, $\alpha < .05$). At a 95% confidence level, 62 of these paths would likely be significant by chance alone. Schumacker and Lomax (1996) note that this method may cause meaningless parameters to be included in a subsequent model; therefore, any interpretation of the modification indices should be guided by theoretical rationale. They recommend that these indices should be used as potential indicators of misfits rather than givens for respecifying a model.

Most substantial modification indices were seen between the items measuring different performance variables and the endogenous performance constructs (i.e., product quality and innovation and self-rated performance/adherence to budget and schedule and team member satisfaction). These results suggest that the performance dimensions may not be orthogonal and may have interrelationships that could be explored in future studies. Modification indices for items measuring project risk and complexity with endogenous performance constructs (i.e., product quality and innovation) suggest that these moderator variables may be quasi moderators as opposed to pure moderators (Sharma, Durand, and Gur-Arie 1981).

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[1] We are grateful to one of the anonymous reviewers for this suggestion.

[2] We are grateful to one of the anonymous reviewers for this suggestion.

Finally, to establish the internal consistency of the measures, we computed Cronbach's alpha coefficients to estimate the reliability of each scale. We dropped items with low item-to-total correlation from the analysis. Operational definitions of the constructs, along with the items used to measure them and the reliability coefficient of each scale, are presented in Appendix C. Nearly all scales display high internal consistency and exceed the .70 level of acceptability laid down by Nunnally (1978). At .68, .63, and .69, respectively, the scales for process- and outcome-based rewards and equal rewards are only slightly below Nunnally's criterion.

Model Estimation

Because some of the hypothesized relationships are nonlinear, both linear and nonlinear regression analyses were used to examine the effect of reward structures (independent variables) on various dimensions of team performance (dependent variables). A separate regression model was analyzed for each dimension of team performance shown in Figure 1. The sign and significance of the standardized coefficients associated with each independent variable provide a test of our hypotheses. Wherever alternative hypotheses were specified, two-tailed t-test results are considered.

We hypothesized that several industry- and project-specific variables will moderate the relationship between team rewards and performance. These effects are estimated by dividing the sample along the mean into two subgroups of high and low levels of the moderator variable. Separate regression analyses were conducted on each subgroup to test the specific hypothesis (Sharma, Durand, and Gur-Arie 1981). Chow's (1960) F-test is performed in each case to determine whether the difference between the high and low subgroups is statistically significant.

H_5 through H_7 predict a nonlinear (inverted-U–shaped) relationship between the independent and dependent variables. This relationship is tested for each relevant subgroup by regressing the dependent variable (Y) on the linear (X) and square term (X^2) of the independent variable simultaneously. An inverted-U–shaped relationship is supported if the coefficient of the X term is positive and the coefficient of the square term (X^2) is negative (Aiken and West 1991, pp. 65–66). Chow's F-test is then performed to determine whether the difference between the high and low subgroups is statistically significant.

Results

Relationship Between Equal and Position-Based Rewards and Internal Dimensions of Team Performance

H_1 predicts that when ease of individual evaluation is high, position-based rewards will be positively related to the internal dimensions of team performance. To test this hypothesis, we split the sample into high and low ease of individual evaluation subgroups for both team member satisfaction and self-rated performance. Regression results presented in Table 1 show that position-based rewards have a significant, positive association with team member satisfaction ($\beta = .35$, $p = .05$) for teams in which the ease of individual evaluation was high. No such relationship was found for the low ease of individual evaluation subgroup. Chow's F-test showed that the difference between the two subgroups is statistically significant ($F_{2,49} = 3.23$, $p < .05$). We conducted a similar analysis for the relationship between position-based rewards and self-rated performance, which was not significant. Therefore, H_1 is partially supported.

H_2 posits that when ease of individual evaluation is low, equal rewards will be positively related to internal dimensions of team performance. The alternative hypothesis suggests that this relationship will be negative. Table 1 shows

TABLE 1

Effect of Equal and Position-Based Rewards on the Internal Dimensions of Team Performance: Regression Results for Total and Subgroup Samples Based on High and Low Ease of Individual Evaluation

	Internal Dimensions of Team Performance					
	Team/Member Satisfaction			Self-Rated Performance		
Reward Structures	Total	High	Low	Total	High	Low
Position-based rewards	.17	$.35^{**}$	–.11	.02	.17	$–.34^{*}$
R^2	.03	**$.12^{**}$**	**.01**	.00	.03	$.12^{*}$
Equal rewards	–.05	.14	$–.36^{*}$	–.09	.06	$–.47^{***}$
R^2	.00	**.02**	**$.13^{*}$**	.00	**.00**	**$.22^{***}$**

$^{*}p < .10$.
$^{**}p < .05$.
$^{***}p < .01$.
Notes: n (total) = 53, n (high) = 29, n (low) = 24. The high and low subgroups for which the Chow test indicates a statistically significant difference are presented in bold.

that when ease of individual evaluation is low, equal rewards are negatively related to both team member satisfaction ($\beta = -.36, p = .08$) and self-rated performance ($\beta = -.47, p = .01$). The difference between the high and low ease of individual evaluation subgroups was significant for both team member satisfaction ($F_{2,49} = 3.24, p < .05$) and self-rated performance ($F_{2,49} = 3.33, p < .05$). These results support $H_{2(alt)}$.

Relationship Between Process- and Outcome-Based Rewards and External Dimensions of Team Performance

H_3 predicts that for long product development cycles, a process-based reward structure will be positively related to the external dimensions of team performance, whereas $H_{3(alt)}$ suggests that this relationship will be negative. The sample was split into two subgroups of long or short product development cycles. The team performance dimensions were regressed on process-based rewards for each subgroup. Table 2, Part A, shows that for long development cycles, process-based rewards had a stronger negative relationship to speed to market ($\beta = -.48, p = .01$), adherence to budget and schedule ($\beta = -.57, p = .003$), product quality ($\beta = -.51, p = .01$), and market performance ($\beta = -.53, p = .007$) than did shorter projects. Chow's F-test showed significant differences between the long and short development cycle subgroups in each case. These results support $H_{3(alt)}$.

In further analysis, we examined how the length of the development cycle moderated the relationship between outcome-based rewards and team performance. Table 2, Part A, shows that for long development cycles, outcome-based rewards have a marginally significant, positive relationship with speed to market ($\beta = .36, p = .08$), innovation ($\beta = .36, p = .08$), and product quality ($\beta = .38, p = .07$) and a significant, positive relationship with market performance ($\beta = .46, p = .02$). Differences between the subgroups were significant for speed to market ($F_{2,49} = 4.29, p < .025$), innovation ($F_{2,49} = 3.30, p < .05$), and market performance ($F_{2,49} = 3.25, p < .05$). We did not find any difference between the long and short product development cycle subgroups; however, for the total sample, product quality ($\beta = .34, p = .01$) showed a significant, positive relationship with outcome-based rewards. These results are consistent with our previous argument that process- and outcome-based rewards have opposite effects on team performance.

H_4 explores the moderating effect of project complexity on the relationship between process-based rewards and the external dimensions of team performance. Table 2, Part B, shows that for the high-complexity subgroup, process-based rewards have a significant, negative association with speed to market ($\beta = -.36, p = .04$) and a marginally significant, negative association with product quality ($\beta = -.29, p = .09$). The negative relationship between process-based rewards and product quality was stronger for low-complexity products ($\beta = -.48, p < .05$) than high-complexity products. Chow's F-test showed a significant difference between the high- and low-complexity subgroups for both speed to market ($F_{2,49} = 3.26, p < .05$) and product quality ($F_{2,49} = 3.48, p < .05$), in partial support of $H_{4(alt)}$. Additional analysis examined whether outcome-based rewards had an effect opposite to that of process-based rewards when product complexity moderated the relationship. Table 2, Part B, shows that for the low-complexity subgroup, outcome-based rewards were positively associated with speed to market ($\beta = .42, p = .05$), product quality ($\beta = .36, p = .09$), and market performance ($\beta = .52, p = .01$). However, Chow's F-test was significant only for speed to market ($F_{2,49} = 3.86, p < .05$).

H_5 predicts that for high-risk products, an inverted-U–shaped relationship will exist between outcome-based rewards and the external dimensions of team performance. Such a relationship was found to exist only for product quality (see Table 3). For the high-risk subgroup, outcome-based rewards were positively related ($b = 3.67, p = .01$), and the square term of outcome-based rewards was negatively related ($b = -3.29, p = .02$) to product quality. Chow's F-test shows that the difference between the high- and low-risk subgroups is significant ($F_{3,47} = 4.23, p < .025$).

We also hypothesized that an inverted-U–shaped relationship will exist between outcome-based rewards and external performance dimensions for highly competitive (H_6) and dynamic (H_7) industries. As before, a significant relationship was found to exist only between outcome-based rewards and product quality (see Table 3). For highly competitive industries, outcome-based rewards were positively related ($b = 2.94, p = .04$), and the square term was negatively related ($b = -2.57, p = .08$) to product quality; the difference between the two subgroups is significant ($F_{3,47} = 3.02, p < .05$). However, contrary to expectations, for industries with low levels of dynamism, product quality was found to be significantly related to outcome-based rewards ($b = 4.54, p = .01$) and its square term ($b = -4.15, p = .01$). The difference between the two subgroups was statistically significant ($F_{3,47} = 3.51, p < .025$). This finding suggests a nonlinear relationship between outcome-based rewards and product quality for less dynamic industries rather than for highly dynamic industries. Thus, H_7 was not supported.

Even though the conditions for establishing the inverted-U–shaped relationships between outcome-based rewards and product quality were satisfied in the case of risky projects and competitive or dynamic industries, further analysis revealed that these relationships were nonlinear and monotonically decreasing.[3] The implications of these results are discussed in the following section.

Discussion

The primary objective of this study was to find ways of enhancing NPD performance by drawing attention to the critical but overlooked area of NPD team rewards. This was done by empirically examining the following research questions:

1. How are the internal performance dimensions of CFPDTs affected by equal and position-based distribution of rewards among team members?
2. How are the external performance dimensions of CFPDTs affected by rewards that are linked to the development process rather than the outcome?

We find that when it is easy to evaluate individual performance in teams, a position-based differential reward

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[3] We are grateful to one of the anonymous reviewers for bringing this to our attention.

TABLE 2
Regression Results for the Effect of Process- and Outcome-Based Rewards on the External Dimensions of Team Performance

A: Total Sample and Long and Short Product Development Cycles Subgroups

Reward Structures	Team Performance Dimensions														
	Speed to Market			Adherence to Budget and Schedule			Level of Innovation			Product Quality			Market Performance		
	Total	Long	Short	Total	Long	Short	Total	Long	Short	Total	Long	Short	Total	Long	Short
Process-based rewards	–.17	–.48***	.10	–.19	–.57***	.08	.00	–.21	.07	–.39***	–.51***	–.30*	–.22*	–.53***	.12
R²	.03	__.23***__	__.01__	.04	__.33***__	__.00__	.00	.05	.00	.15***	__.26***__	__.09*__	.05*	__.28***__	__.01__
Outcome-based rewards	.31**	.36*	.20	.17	.29	.04	.18	.36*	.14	.34***	.37*	.28	.38***	.46**	.25
R²	.09**	__.13*__	__.04__	.03	.08	.00	.03	__.13*__	__.02__	.11***	.14*	.08	.15***	__.22**__	__.06__

B: Total Sample and High and Low Project Complexity Subgroups

Reward Structures	Team Performance Dimensions														
	Speed to Market			Adherence to Budget and Schedule			Level of Innovation			Product Quality			Market Performance		
	Total	High	Low	Total	High	Low	Total	High	Low	Total	High	Low	Total	High	Low
Process-based rewards	–.17	–.36**	–.04	–.19	–.28	–.13	.00	.08	.10	–.39***	–.29*	–.48**	–.22*	–.30*	–.11
R²	.03	__.13**__	__.00__	.04	.08	.02	.00	.00	.00	.15***	__.08*__	__.23**__	.05*	.09*	.01
Outcome-based rewards	.31**	.20	.42**	.17	.06	.32	.18	.05	.22	.34***	.28	.36*	.38***	.20	.52***
R²	.09**	__.04__	__.18**__	.03	.00	.10	.03	.00	.22	.11***	.08	.13*	.15***	.04	.27***

*p < .10.
**p < .05.
***p < .01.
Notes: In Part A, n (total) = 53, n (long) = 24, n (short) = 29; In Part B, n (total) = 53, n (high) = 31, n (low) = 22. The high and low subgroups for which the Chow test indicates a statistically significant difference are presented in bold.

TABLE 3

Effect of Outcome-Based Rewards on the External Dimensions of Team Performance: Regression Results for Total and Subgroup Samples of High and Low Levels of Product/Project Risk, Competitive Intensity, and Industry Dynamism

Reward Structures	External Dimensions of Team Performance														
	Speed to Market			Adherence to Budget and Schedule			Level of Innovation			Product Quality			Market Performance		
	Total	High	Low	Total	High	Low	Total	High	Low	Total	High	Low	Total	High	Low
A: Product/Project Risk															
Outcome-based rewards	1.16	.98	.94	.05	.80	–.37	1.09	.47	1.75	1.49	3.67***	–.06	.84	1.60	.11
Outcome-based rewards^2	–.87	–.82	–.51	.12	–.59	.52	–.93	–.26	–1.73	–1.17	–3.29**	.22	–.46	–1.29	.32
R^2	.11**	.04	.19*	.03	.05	.03	.05	.05	.07	.14**	**.32*****	**.03**	.15**	.12	.18*
B: Competitive Intensity															
Outcome-based rewards	1.16	2.16	.41	.05	1.36	–1.21	1.09	–.75	2.43*	1.49	2.94**	.45	.84	2.50*	–.24
Outcome-based rewards^2	–.87	–1.87	–.08	.12	–1.13	1.31	–.93	.86	–2.19*	–1.17	–2.57*	–.16	–.46	–2.05	.53
R^2	.11**	.14	.11	.03	.08	.05	.05	.02	.18*	.14**	**.25****	**.08**	.15**	.28**	.09
C: Industry Dynamism															
Outcome-based rewards	1.16	.67	2.23	.05	–.70	2.47	1.09	.81	1.26	1.49	.02	4.54***	.84	.03	2.26
Outcome-based rewards^2	–.87	–.38	–1.90	.12	.81	–2.28	–.93	–.66	–1.00	–1.17	.24	–4.15***	–.46	.17	–1.72
R^2	.11**	.10	.16	.03	.03	.09	.05	.04	.08	.14**	**.07**	**.35*****	.15**	.04	.33***

*$p < .10$.
**$p < .05$.
***$p < .01$

Notes: For product/project risk and competitive intensity, n (total) = 53, n (high) = 28, n (low) = 25; for industry dynamism, n (total) = 53, n (high) = 27, n (low) = 26. The high and low subgroups for which the Chow test indicates a statistically significant difference are presented in bold.

structure is more effective and leads to greater team member satisfaction. Such a reward structure recognizes the different levels of contribution, responsibility, and risk shouldered by different members of the team. These findings are consistent with the thesis proposed by Nahavandi and Aranda (1994), who argue that for teams to be successful in Western cultures, the team-based approach must be adapted to Western cultural values. Similarly, Cropanzano and Randall (1993) suggest paying close attention to fairness in group reward distribution (i.e., rewards proportional to individual contribution) when dealing with members from individualistic cultures or when superior group performance is desired.

When ease of individual evaluation is low, an equal distribution of rewards was expected to be more effective. Contrary to expectations, equal rewards were negatively related to both team member satisfaction and self-rated team performance. For low ease of individual evaluation, even a position-based differential distribution of rewards showed a weak, negative association with self-rated performance; however, these differences were not statistically significant. Although surprising, these findings can be explained on the basis of procedural justice (Baron and Byrne 1997; Cropanzano and Randall 1993). When ease of individual evaluation is low, a perception of bias and inaccuracy is likely to persist in the minds of team members. Such perceptions of subjectivity/unfairness in the reward and evaluation process may be difficult to dispel and can have a negative influence on both team member satisfaction and team performance, regardless of how the rewards are distributed.

These findings imply that organizations should develop evaluation systems to monitor the performance of individual team members accurately (Pascarella 1997). In a survey of the salary and incentive practices of the NPD function, Feldman (1996) found that of the CFPDTs examined, team members were evaluated by their functional managers 57% of the time, by their team leader 7% of the time, and by a combination of the two 11% of the time. Our qualitative data suggest that functional managers frequently had little knowledge of a member's performance on a CFPDT, which led to inaccurate and biased evaluations. If cross-functional teams are to achieve their full potential in realizing substantial improvements in the NPD process, reward and evaluation systems must be modified accordingly. Simply considering input from those who are most familiar with a team member's performance (e.g., team leaders, other members) could significantly improve the evaluation process. This would make evaluations more accurate and credible and the reward distribution more effective.

An empirical examination of process- and outcome-based rewards yielded some surprising results as well. We had expected that for long and complex products, a process-based structure would be positively related to external dimensions of team performance. However, for long development cycles, process-based rewards had a significant, negative association with speed to market, adherence to budget and schedule, product quality, and market performance, whereas outcome-based rewards had a positive association with speed to market, level of innovation, and market performance. For the total sample, outcome-based rewards showed a significant, positive relationship with product quality.

Similar results were obtained for highly complex products: Process-based rewards showed a negative relationship with speed to market and product quality. However, the negative relationship between process-based rewards and product quality was stronger for less complex products. In contrast, for the total sample, outcome-based rewards showed a positive association with product quality and market performance. The positive relationship between outcome-based rewards and speed to market was stronger for less complex products than the more complex ones. These results indicate that teams respond well to rewards that are linked to outcomes under conditions in which outcomes are more predictable (i.e., when developing less complicated products).

The pattern of results suggests that for NPD projects in general and for long and complex projects in particular, linking rewards to process-based criteria (such as procedures or behavior) is detrimental to team performance, whereas linking rewards to the output produced by the team has a positive influence on the external dimensions of CFPDT performance. These results are consistent not only with recent research on NPD (e.g., Bonner, Ruekert, and Walker 1998) but also with the organizational control literature and expectancy theory. The central tenet of expectancy theory suggests that people are motivated to greater performance when they perceive a clear link between their efforts/performance and rewards (Baron and Byrne 1997). Making rewards contingent on the outcome establishes such a clear link (Merchant 1985). Exceeding established performance criteria results in rewards, and failure to meet them could result in sanctions (Child 1984). Lawler and Rhodes (1976) note that because outcome-based criteria are objective, they are more effective in fostering the behavior required for achieving set goals.

On the basis of agency theory, we suggested that the relationship between an organization and a team is similar to that between a principal and an agent, because both sides try to minimize their respective risks. For risky projects and highly competitive or dynamic industries, we expected that sharing risk between the team and the organization would result in optimal CFPDT performance. Under these conditions, we expected an inverted-U–shaped relationship to exist between outcome-based rewards and the external dimensions of team performance. However, instead of an inverted-U–shaped relationship, a nonlinear and monotonically decreasing relationship was found to exist between outcome-based rewards and product quality for high-risk projects and highly competitive industries. Therefore, for CFPDTs involved in risky projects or highly competitive industries, a completely outcome-based reward structure is likely to be counterproductive.

Similar results were also obtained for less dynamic industries. Turbulence in an industry can lead to vague standards for evaluating performance. However, even conditions under which team outcomes and the standards used to evaluate these outcomes are relatively predictable and stable, CFPDTs are willing to assume only a negligible amount of the risk. A possible explanation may be that the perceptions of industry dynamism are relative. This study was conducted in high-tech industries, which are well known for their highly turbulent and dynamic environments. By the standards of these industries, relatively stable environments may still be turbulent enough to present excessive risk to

CFPDTs. Even in relatively less dynamic environments of these industries, the rules of the game and the standards for measuring success and failure change frequently, which is a source of concern to the teams in our sample. Linking rewards to outcome under these circumstances places the teams at greater risk and has a counterproductive effect on product quality.

For risky projects and highly competitive and less dynamic industries, the relationship between product quality and outcome-based rewards is nonlinear but monotonically decreasing. Product quality decreased with increasing levels of outcome-based rewards (which denotes team risk), which led us to conclude that NPD teams make a clear distinction between the risk to themselves and the risk to the organization. These CFPDTs operate in an extremely risk-averse mode, and the amount of risk they are willing to assume remains highly skewed in their own favor.

Process- and outcome-based rewards exert a complicated influence on the external dimensions of team performance. Our results suggest that though moderating risk (by using process-based reward) makes CFPDTs complacent, high levels of risk (associated with outcome-based reward) make teams vulnerable. Teams respond to reward structures in a manner that minimizes their own risk. Such risk-minimizing behavior on the part of the teams is consistent with agency theory. As Robbins and Finley (1995, p. 131) astutely note, "teams will not carry out business objectives if doing so puts them at risk."

The seemingly contradictory effects of outcome-based reward structures on performance are similar to those seen in the goal-setting theory literature. Similar to rewards, clear and specific goals are expected to motivate higher performance (Locke et al. 1981). However, recent research in goal-setting theory suggests that goals considered ambiguous, risky, or too difficult to achieve are rejected, which leads to lower performance (Earley, Shalley, and Northcraft 1992).

We observe similar effects in our results: Outcome-based rewards have a positive influence on performance, as long as the rewards are considered low risk and achievable (i.e., long and less complex projects). However, industry dynamism can lead to vague standards, and risky projects and competitive environments can result in outcome objectives that are perceived to be too difficult. Under these conditions, teams may reject an outcome-based reward structure, which leads to lower performance. Cases of rejection are more frequent when the outcome is a function of strategy rather than effort and no clear optimal strategy is evident (Earley, Connolly, and Ekegren 1989). Because these conditions are characteristic of the NPD process, the acceptance/rejection of rewards offers another possible explanation for the complicated effect of outcome-based reward structures on CFPDT performance.

Conclusions

Managers can draw four implications from our findings. First, when it is easy to evaluate individual performances in the team, rewarding members differentially on the basis of their position/status in the organizations is likely to result in higher satisfaction among team members, because senior team members bear a disproportionate share of the risk and responsibility associated with the team.

Second, organizations should consider investing in more accurate and unbiased methods of evaluating individual team members. Because both position-based and equal rewards exert a negative influence on performance when ease of individual evaluation is low, better evaluation systems may minimize perceptions of unfairness and inaccuracies in the distribution of rewards. Third, for long or less complex projects, process-based rewards have a negative influence on team performance, whereas outcome-based rewards enhance performance.

Fourth, for risky projects and highly competitive or relatively stable industries, outcome-based rewards exhibit a nonlinear and monotonically decreasing relationship with product quality. Under these conditions, linking rewards to the project outcomes has a detrimental effect on product quality. Our results suggest that NPD teams clearly distinguish between risk to the organization and risk to themselves. Although teams are willing to share some risk with the organization, they tend to minimize their own risk exposure. Reward structures that are most effective in enhancing team performance are those that present minimal risk to the team. Outcome-based rewards that are perceived to be too risky, too vague, or too difficult to achieve are likely to be rejected by the team, which leads to lower product quality.

This study is one of the first to examine empirically the critical issue of how reward structures affect CFPDT performance. In a significant improvement over existing studies, we measure team performance in terms of seven underlying dimensions. Our results show that performance dimensions are not affected uniformly by the reward structures. This lends support to our argument that CFPDT performance must be disaggregated to develop a clearer picture of the NPD process. Many of our results are counterintuitive and challenge conventional wisdom. We hope that these findings will encourage both academicians and practitioners to reexamine some currently accepted theories and practices.

Readers should bear in mind some caveats when interpreting the results of this study. This study was conducted on NPD teams in high-tech industries, and therefore the results may not generalize to teams in other contexts and industries. Some measures of reward structures used here performed below expectations and could be further refined in the future. Another possible limitation is that all members were not surveyed in each team. Reliance on key respondents may bias the data; however, we sampled multiple respondents in each team to minimize such bias. Performance measures used here are largely self-reported, perceptual, and relative. Olson, Walker, and Ruekert (1995) argue that these kinds of measures are justified because organizations are hesitant to share confidential data. Prior research has used multiple respondents to minimize the problems caused by perceptual and self-reported measures and common-method bias (e.g., Ancona and Caldwell 1992a; Henderson and Lee 1992; Olson, Walker, and Ruekert 1995). It is possible that specification errors were introduced in the analysis because of the omission of firm/line-of-business effects. Finally, testing alternative hypotheses resulted in a large number of unsupported hypotheses, which, coupled with low regression coefficients, increases the probability of finding significance by chance alone. We suggest that readers exercise caution when interpreting the results of this study.

The issue of rewarding CFPDTs is ripe with opportunities for further research. Extensions of this study might examine the effect of other reward mechanisms (e.g., financial rewards, formal versus informal rewards, punitive rewards). Future studies could also examine the effect of position-based and equal rewards on the internal and external dynamics of the team. Finally, an examination of team evaluation structures and their effects on CFPDT performance offers a fruitful area of future exploration.

APPENDIX A

Level of Convergence Among the Multiple Respondents on Teams for Each Construct

Construct	Range of Standard Deviations Across Teams				
	Lowest Standard Deviation	Highest Standard Deviation	Average Standard Deviation	Mean	Scale
Outcome-based rewards	.00	1.43	.47	2.19	1–5
Process-based rewards	.14	1.50	.47	3.48	1–5
Equal rewards	.14	1.06	.40	3.12	1–5
Position-based rewards	.00	1.67	.54	3.05	1–5
Ease of individual evaluation	.00	1.01	.39	3.47	1–5
Project/product complexity	.11	1.97	.58	3.51	1–5
Project/product risk	.00	1.50	.60	3.75	1–5
Length of development cycle	.00	24.90	15.60	23.30	(Months)
Competitive intensity	.00	.95	.39	3.68	1–5
Industry dynamism	.06	1.01	.47	2.84	1–5
Speed to market	.11	1.24	.56	2.92	1–5
Level of innovation	.00	1.54	.54	3.68	1–5
Adherence to budget and schedule	.07	1.13	.52	3.49	1–5
Product quality	.05	1.26	.43	3.86	1–5
Market performance	.09	1.16	.59	3.21	1–5
Team/member satisfaction	.08	1.31	.46	3.54	1–5
Self-rated performance	.00	1.66	.45	3.57	1–5

APPENDIX B

Principal Component Analysis of Items Measuring Reward Structures

Items	Factor 1	Factor 2	Factor 3	Factor 4
1. The best performers on our team receive extra rewards.		.69		
2. All team members are rewarded equally for their work on the team, independent of their individual contributions.		.69		
3. The rewards team members receive for working on this team are proportional to their contribution to the team's performance.		.65		
4. Members who perform well on the team are individually rewarded/recognized in the team for their work.		.62		
5. The rewards team members receive for working on this team are proportional to their individual salaries.			.81	
6. The rewards team members receive for working on this team are proportional to their position in the organization.			.90	
7. The rewards received by our team/individual members are related entirely to the profit contribution attributed to the team.				.70
8. Rewards to the team/individual members are deferred until bottom-line results of the team (e.g., product performance, market share, profitability, sales) are available.				89
9. The team is rewarded for completing major milestones/stages/phases during the development of the product.	.88			
10. Teamwork behavior is taken into account when evaluating/rewarding the team.	.74			
11. The team is rewarded for meeting certain prescribed conditions when reviewed periodically during product development.	.87			

Notes: Factor 1 corresponds to process-based rewards, Factor 2 corresponds to equal rewards (items 1, 3, and 4 are reverse coded), Factor 3 corresponds to position-based rewards, and Factor 4 corresponds to outcome-based rewards.

APPENDIX C
Construct Definitions and Measures

Construct	Definition	Items	Adapted From
Equal rewards (4 items, alpha = .69)	The degree to which rewards are distributed uniformly among team members.	The best performers on our team receive extra rewards. [R] All team members are rewarded equally for their work on the team, independent of their individual contribution. The rewards team members receive for working on this team are proportional to their contribution to the team's performance. [R] Members who perform well on our team are individually rewarded/recognized in the team for their work. [R]	New scale Deutsch (1968); Faure and Weitz (1993)
Position-based rewards (2 items, alpha = .80)	The degree to which rewards are distributed among team members on the basis of the relative position/status enjoyed by them in the organization.	The rewards team members receive for working on this team are proportional to their individual salaries. The rewards team members receive for working on this team are proportional to their position in the organization.	New scale Deutsch (1968); Faure and Weitz (1993)
Outcome-based rewards (2 items, alpha = .63)	The degree to which team rewards are tied to the bottom line/profitability of the product developed by the team.	The rewards received by our team/individual members are related entirely to the profit contribution attributed to the team. Rewards to the team/individual members are deferred until bottom-line results of the team (e.g., product performance, market share, profitability, sales) are available.	New scale Deschamps and Nayak (1995); Jaworski (1988)
Process-based rewards (3 items, alpha = .68)	The degree to which team rewards are tied to procedures, behaviors, and other means of achieving desired outcomes.	The team is rewarded for completing major milestones/stages/phases during the development of the product. Teamwork behavior is taken into account when evaluating/rewarding the team. The team is rewarded for meeting certain prescribed conditions when reviewed periodically during product development.	New scale Deschamps and Nayak (1995); Jaworski (1988)
Project risk (4 items, alpha = .88)	The magnitude of failure associated with the project.	Our organization has a lot riding on this project. Poor market performance by this product will have serious consequences for our business. Our organization has made a significant investment in the development of this product. The outcome of this project has high strategic value for our organization.	New scale March and Shapira (1987)
Project/product complexity (5 items, alpha = .86)	The degree to which the development process was complicated and difficult.	The product developed by our team was technically complex to develop. Our team had to use nonroutine technology to develop the product. The development process associated with the product was relatively simple. [R] Development of this product required pioneering innovation. The product developed by our team is/was complex.	Hill (1972); Kahn and Mentzer (1992); McCabe (1987)
Length of the product development cycle	A measure of the duration of the project (in months).	Please indicate the number of months that elapsed (or will have elapsed) between the time that this product was first formally approved and the time that it was (or will be) finally introduced/launched in the market.	
Ease of individual evaluation (4 items, alpha = .80)	The ease with which individual performances can be evaluated in the team effort.	It is easy to identify a few individuals on this team without whom this project would not have been possible. It is easy to evaluate what each member contributed to this project. It is easy to evaluate how much each member contributed to this project. It is difficult to evaluate how much effort any member in this team really put into this project. [R]	New scale John and Weitz (1989)

APPENDIX C
Continued

Construct	Definition	Items	Adapted From
Industry competitive intensity (4 items, alpha = .76)	The degree to which companies experience rivalry within their industry.	Competitive pressures have led to firms in this industry spending more of each sales dollar on marketing. Firms in this industry aggressively fight to hold onto their share of the market. Competition in this industry is intense. Firms in this industry follow a philosophy of peaceful coexistence. [R]	Lusch and Laczniak (1987)
Industry dynamism (8 items, alpha = .89)	The perceived frequency of change and turnover in marketing forces in the industry environment.	Frequency of changes in the mix of products/brands available. Frequency of changes in sales strategies. Frequency of changes in product standards. Frequency of changes in customer preferences in product features. Frequency of changes in customer preferences in product quality. Frequency of changes in technology used. Frequency of major competitors entering or leaving the industry. Frequency of changes in customer preference in product price. (Measured on a five-point scale: 1 = "very infrequent," 5 = "very frequent").	Achrol and Stern (1988)
Speed to market (5 items, alpha = .86)	A (time) measure of the pace at which the product was developed by the team.	This product was developed much faster than other comparable products developed by our organization. This product was developed much faster than similar products developed by our nearest competitors. This product could have been developed in a shorter time. [R] The product concept formation (i.e., opportunity identification and product design) took longer than expected. [R] The product commercialization (i.e., product/market testing, production, distribution, promotion, sales) took longer than expected. [R]	New scale Olson, Walker, and Ruekert (1995)
Adherence to budget and schedule (7 items, alpha = .89)	The degree to which the team met its scheduled deadlines and stayed within its budget.	The team made efficient use of its time. The team's project is behind schedule. [R] The team operated in a cost-efficient manner. The team did a good job adhering to its budget. The team did a good job of meeting all of its schedule deadlines. The team's project is over budget. [R] In general, this team operated in an efficient manner.	Ancona and Caldwell (1991, 1992a); Olson, Walker, and Ruekert (1995)
Degree of innovation (6 items, alpha = .85)	The degree of newness of the product under development.	Several product-related innovations were introduced during the development of this product. High-quality technical innovations were introduced during the development of this product. Compared to similar products developed by our competitors, our product will offer unique features/attributes/benefits to the customers. Our product introduces many completely new features to this class of products. Compared to similar products developed by our organization, our product will offer unique features/attributes. Check (one of the following) statement that best (or most closely) describes the product developed by your team [R]: (a) The product is entirely new to both our firm as well as the customers, (b) The product is new to the customers but not very new to our firm, (c) The product is new to our firm but not very new to the customers, (d) The product is neither new to our firm nor new to the customer, (e) Our product is an imitation of an existing product.	New scale Ancona and Caldwell (1992a); Booz, Allen & Hamilton (1982); Olson, Walker, and Ruekert (1995)

APPENDIX C
Continued

Construct	Definition	Items	Adapted From
Product quality (10 items, alpha = .93)	An overall measure of the degree to which the product delivers value to the customer and meets the quality control standards laid out for it by the team/organization.	Quality of this product compares well with similar products offered by our competitors. The product meets the customers' needs. Complaints have been received regarding the poor performance of this product. [R] The product meets the specifications outlined for it. The product is reliable. This product is of a higher quality than competing products available to the customer. The product's performance shows little deviation from expected standards. Quality of this product compares well with other products developed by our organization. The consumers of this product perceive our product to be better than our competitors'. This product will deliver benefits to the customers that are not currently available to them.	New scale Olson, Walker, and Ruekert (1995)
Market performance (6 items, alpha = .91)	A measure of how the developed product is faring in the market, relative to expectations.	Level of sales achieved. Customer satisfaction with the product. Market performance of the product relative to its competition. Chances of the product being a success in the market. Level of initial market penetration. Projected financial returns on this product. (Measured on a five-point scale: 1 = "far below expectations," 5 = "far above expectations").	New scale Meyer (1994)
Self-rated performance (7 items, alpha = .90)	A measure of the team members' perception of their team's performance compared with other teams in their organization.	The quality of the product developed. Team's reputation for work excellence. Attainment of the goals set for the team. Efficiency of the team's operations. Morale of the team. Adherence to schedule. Adherence to budget. (Measured on a five-point scale: 1 = "far below average," 5 = "far above average").	Ancona and Caldwell (1991, 1992a); Van De Ven and Ferry (1980)
Team/member satisfaction (5 items, alpha = .87)	The degree to which association with the team and its project is/was considered to be worthwhile and productive by the team members.	Team members are satisfied with the recognition they get for their work on this team's project. Team members are satisfied with the amount of responsibility they were given on this team. Team members are satisfied with the way this team was managed. Team members are satisfied with the opportunities they were given to use their abilities. Team members are satisfied with the amount of job variety that was offered by this project.	Brayfield and Rothe (1951); Pinto, Pinto, and Prescott (1993); Warr, Cook, and Wall (1979).

Notes: Unless otherwise mentioned, all items were measured on a five-point Likert-type scale (1 = "strongly disagree," 5 = "strongly agree"). [R] denotes reverse coding.

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Kenneth H. Wathne, Harald Biong, & Jan B. Heide

Choice of Supplier in Embedded Markets: Relationship and Marketing Program Effects

Recent research has documented how exchanges between buyers and sellers are frequently embedded in social relationships. An unresolved question, however, is the extent to which such relationships protect incumbent suppliers from new competitors and their marketing programs. The authors develop a conceptual framework of how relationship and marketing variables influence choice of supplier and test the framework empirically in the context of business-to-business services. The results show that interpersonal relationships between buyers and suppliers serve as a switching barrier but are considerably less important than both firm-level switching costs and marketing variables. Moreover, unlike switching costs, interpersonal relationships do not play the frequently mentioned role of a buffer against price and product competition. Finally, the authors show that buyers and suppliers hold systematically different views of the determinants of switching.

Since the publication of Arndt's (1979) seminal article on "domesticated markets," there has been an explosion of research on various aspects of interorganizational relationships. Collectively, these studies have made a strong case for the importance of creating close, or relational, exchanges with key customers. They have also generated important insights into the properties of such relationships (e.g., Crosby and Stephens 1987; Dwyer, Schurr, and Oh 1987; Heide and John 1990; Moorman, Zaltman, and Deshpandé 1992; Noordewier, John, and Nevin 1990).

From a strategic standpoint, the implicit assumption in much of the relationship literature is that certain relationship properties serve defensive purposes by acting as switching barriers (e.g., Crosby, Evans, and Cowles 1990). In certain respects, this represents a different perspective from the one that underlies much of the marketing strategy literature. As Fornell and Wernerfelt (1987) note, this literature has emphasized offensive strategies designed to encourage customer switching on the basis of deliberate deployment of marketing-mix variables such as product and price.

Both intuition and anecdotal evidence suggest that economic actors are influenced by both marketing variables and relationship properties. Theoretically, this is consistent with Granovetter's (1985) thesis that economic transactions are "embedded" in social relationships. Unfortunately, although this thesis is difficult to refute, it is also conceptually vague (Uzzi 1996). An intriguing yet unanswered question is whether marketing and relationship variables differ in relative importance in the choice of exchange partner.

Some economists have shown skepticism toward the embeddedness thesis and downplayed the role of social relations (Baron and Hannan 1994). Similarly, Crosby and Stephens (1987, p. 411) caution against the implicit assumption in the relationship marketing literature that "relationships are entirely social" and instead emphasize the role that marketing variables play in a customer relationship. In contrast, others have downplayed the role of marketing variables and argued that focusing on them is "simplistic and restrictive" (Christopher, Payne, and Ballantyne 1991, p. 8). Given that both relationship-building and marketing variables involve investments of various kinds, knowledge about their relative effectiveness would represent important input of a firm's resource allocation decision.

In a similar vein, the extant literature does not offer much insight into whether these variables have interactive effects on buyer behavior. From a theoretical perspective, a case could be made that each set of variables represents a different source of utility and that the effect of one could be moderated by another (e.g., Burt 1992; Granovetter 1992). For example, the effect of a superior price offered by a new entrant may depend on whether the target customer has developed a strong relationship with an incumbent supplier. If the target customer has developed close personal relationships with the incumbent, switching means giving up utility from the preexisting relationship. Consequently, the positive effect of an entrant's superior price on customer switching might decrease as interpersonal relationships tied to the incumbent supplier increase. Unfortunately, such hypotheses are rarely found in the marketing literature, and empirical evidence is virtually nonexistent.

Finally, a largely unexplored question is whether buyers and suppliers within an ongoing relationship have conver-

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gent perceptions regarding the importance of marketing and relationship variables. Much of the prior research on relationships has been limited to exploring one party's perspective, typically that of a manufacturer or supplier. Moreover, to the extent that perceptual differences in a relationship have been recognized, they have often been viewed somewhat narrowly, as a source of measurement error (e.g., Phillips 1981; for an exception, see Steinman, Deshpandé, and Farley 2000). We argue, however, that such differences have important strategic implications. For example, a supplier that overestimates the strength of the relationship with a particular buyer and its effect on the buyer's decisions may be vulnerable to competitive moves. Moreover, a supplier that assumes that relationship building is more important than developing new products or services may be misallocating marketing resources and over time may become locked in with customers that do not take a long-term perspective on the relationship. Therefore, we seek to shed light on the implicit assumption in much of the extant literature about the importance of close customer relationships.

In summary, we seek to make two main contributions to the literature. First, we examine whether and how buyers' choices of suppliers in business-to-business services markets are influenced by the categories of variables mentioned previously, namely, a new supplier's marketing program elements and aspects of the relationship between the buyer and an incumbent supplier. In addition to examining the main effect of each set of variables, we assess the relative importance of the different variables in influencing supplier choice and examine whether interrelationships exist between the different variables, in the sense that the effect of one depends on the level of another. Second, by virtue of collecting data from both buyers and suppliers, we document whether systematic differences exist between parties regarding the effects of the focal variables.

The article is organized as follows: In the next section, we present our conceptual framework, including our research hypotheses. Then we describe our research design and the empirical tests. Finally, we discuss the implications of our findings, the study's limitations, and possible topics for further research.

Theory and Hypotheses

The general focus of this study is the determinants of supplier choice. Specifically, we examine whether a buyer that has a preexisting supplier relationship but is being approached by a new competitor will decide to remain with the incumbent supplier or switch to the new one. We explore whether (1) certain aspects of an incumbent relationship protect that particular supplier and (2) the tools that are available to a new supplier can undermine an existing relationship. Our focus is consistent with Keaveney's (1995, p. 71) call for "a theory of customer switching behavior, from the customer's perspective."

Prior research provides considerable insight into the conditions that promote continuity in a *given* relationship, such as social and structural bonds (Berry 1995), relationship quality (Crosby, Evans, and Cowles 1990), satisfaction (Fornell 1992), and service quality (Ostrom and Iacobucci 1995). By virtue of promoting continuity, certain relationship properties are also assumed to constitute impediments to *switching* to a competing relationship. However, it has not always been clearly articulated why particular relationship characteristics represent switching barriers.

In the following sections, we focus on two particular aspects of a buyer's relationship with an incumbent supplier that we expect to be intimately linked with switching decisions. Specifically, we focus on the effects of interpersonal relationships (e.g., Granovetter 1992; Seabright, Levinthal, and Fichman 1992) and switching costs (e.g., Heide and Weiss 1995; Weiss and Anderson 1992). Both of these derive from previous investments in the supplier relationship. However, the specific nature of the investments differs. Whereas interpersonal relationships derive from individuals' investments in social capital (e.g., Coleman 1990), switching costs arise from organizational-level investments in transaction-specific assets (e.g., Williamson 1985). Thus, each dimension exists at a different level, that is, interpersonal and interorganizational, respectively.

In the next sections, we specify how interpersonal relationships and switching costs protect an incumbent supplier. As we discuss, each one serves as a switching barrier due to the potential loss of an investment in case of relationship termination. Next, we predict how a potential new supplier may use price and product strategies to induce switching. Finally, we discuss the likely interactions among these variables.

Interpersonal Relationships

One of the cornerstones of the economic sociology literature on embedded markets (e.g., Granovetter 1985, 1992) is that economic transactions take place within the context of interpersonal relationships. Interpersonal relationships are conceptualized as the degree to which a close and personal relationship exists between boundary personnel in the transacting organizations (Baker 1990; Marsden and Campbell 1984; Uzzi 1997). Wilson (1995) notes that within the context of buyer–supplier relationships, interpersonal relationships evolve through social interaction between buyers and account managers. The extant literature has identified such relationships in a variety of industries, including apparel (Uzzi 1997), publishing (Coser, Kadushin, and Powell 1982), construction (Eccles 1981), advertising (Baker, Faulkner, and Fisher 1998), auditing (Seabright, Levinthal, and Fichman 1992), computer hardware (Larson 1992), life insurance (Crosby and Stephens 1987), and grocery retailing (Murry and Heide 1998).

The existing marketing literature acknowledges the importance of interpersonal relationships. For example, researchers in the relationship marketing area discuss the emotional bonding that transcends economic exchange (Sheth and Parvatiyar 1995). Implicitly or explicitly, the assumption is made in this literature that the presence of a close personal relationship protects an existing relationship from competition. The stronger the relationship, the lower is the likelihood of switching. For example, Jüttner and Wehrli (1995, p. 230) have argued that "the focal points for facilitating and maintaining relationships are the psychological and social factors of the individual actors" and that "affinity is the first consideration...[;] the ability to produce services is secondary."

Although we acknowledge the potential role of interpersonal relationships, we believe that prior research has paid insufficient attention to the specific reasons that personal relationships prevent switching. The economic sociology literature mentioned previously provides one possible explanation. Specifically, within an exchange relationship, a party derives utility both from the attributes of a focal product or service and from interpersonal relationships (Frenzen and Davis 1990; Granovetter 1992).[1] Regarding the latter, Burt (1992) describes how close interpersonal relationships reflect social bonds that hold relationships together. These bonds arise from prior investments in social capital, whose return depends on the relationship's longevity. Social capital is broadly defined as an asset that inheres in social relationships (Coleman 1988), which over time accumulates in the form of a series of relationship-specific obligations and reciprocity expectations. Burt (1997) and Coleman (1990) describe this capital in terms of "credit slips" that a person can draw on in time of need.

Thus, the structure of a person's social relationship with an exchange partner will determine how potential new partners are viewed. The closer the preexisting interpersonal relationship, the greater are the prior investment in social capital and the likelihood that the relationship in question will be maintained. In Dwyer, Schurr, and Oh's (1987) terminology, a strong interpersonal relationship serves as a form of mobility barrier. A parallel argument can be derived from social exchange theory (Anderson and Narus 1990; Gassenheimer, Houston, and Davis 1998; Thibaut and Kelley 1959): The better the outcome from the interactions with a focal exchange partner, the less attractive other partners will be perceived to be. On the basis of this theoretical discussion, we propose the following hypothesis:

> H_1: The closer the interpersonal relationships between the boundary personnel in the supplier and customer firms, the lower is the likelihood of customer switching.

Switching Costs

Switching costs refer to the buyer's perceived costs of switching from the existing to a new supplier (Heide and Weiss 1995; Weiss and Anderson 1992). Buyer switching costs arise as a result of prior partner-specific investments in physical assets, organizational procedures, and/or employee training. For example, buyers may develop procedures for dealing with a specific supplier that will need to be modified if a new relationship is established (Heide and John 1990).

Similar to interpersonal relationships, switching costs represent a disincentive to explore new suppliers (Anderson and Narus 1990; Morgan and Hunt 1994). To the extent that a buyer's investments are idiosyncratic to an individual supplier, switching means giving up future returns. The buyer may also incur direct search and evaluation costs, as well as opportunity costs due to lost synergies (Zajac and Olsen 1993). Thus, as with interpersonal relationships, the history of a particular buyer–supplier relationship has implications for its future course (Ford 1990; Håkansson 1982). We propose the following hypothesis:

> H_2: The higher the level of supplier-related switching costs, the lower is the likelihood of customer switching.

Although the conditions mentioned in both H_1 and H_2 may serve as impediments to switching, two important differences between them should be pointed out. First, whereas the impediment to switching in the case of personal relationships originates from investments in social capital (e.g., Coleman 1990), the source of switching costs are investments in other forms of capital (including specific assets; Williamson 1985). Second, switching costs exist at the firm level, whereas interpersonal relationships exist at the individual level. In Wilson's (1995) terminology, these two factors are examples of structural and social bonds, respectively.

Our discussion so far has focused on the conditions that protect an incumbent supplier from new competitors. We consider next the tools available to a new supplier for penetrating an existing relationship.

Price

A new potential supplier that offers economic terms superior to those of the incumbent enables a buyer to realize immediate cost savings. Over time, these savings may become substantial (Kranton 1996). Therefore, intuition suggests that the lower the entrant's price relative to the incumbent, the greater is the economic payoff from switching and the higher is the likelihood that the customer will switch.

This intuition does not reflect the scope of extant theory on buyers' responses to price. Two different streams of research are relevant here. First, prior research in the information-processing tradition (Monroe and Dodds 1988) suggests that buyers may associate a low price with low quality. As such, a lower price by a competing supplier need not represent an incentive to switch.

Second, offering a contrasting prediction, information economics suggests that a low price may serve as a signal of high quality. In Kirmani and Rao's (2000) terminology, a low introductory price is an example of a "sale-contingent, default-independent" signal. Specifically, high-quality suppliers may attempt to induce trial through a low price (Schmalensee 1978), because a high-quality offering will generate more repeat purchases and the focal supplier may be willing to sacrifice current profits for future revenues. In contrast, a low-quality supplier that will not enjoy repeat purchases would not be motivated to send such a signal. Therefore, a low price may convey credible quality information about some aspect of the supplier and provide an incentive for customers to switch.

As Kirmani and Rao (2000) note, the information economics perspective differs in important ways from the conventional information processing perspective. Whereas the latter perspective considers "lazy" consumers who use pricing information to make cognitive shortcuts, the information economics perspective assumes rational consumers who evaluate the implicit commitments that underlie various signals. We subscribe to the information economics perspective and offer the following prediction:

> H_3: The lower the price offered by the new potential supplier relative to the incumbent, the higher is the likelihood of customer switching.

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[1] In the economic sociology literature (e.g., Burt 1992), the utility a party derives from interpersonal relationships is of a noneconomic nature. However, as Williamson (1985, p. 62) notes, it is also possible that such relationships produce economic benefits—for example, in the form of communication economies.

Product Breadth

Another means by which a new potential supplier can combat an incumbent is through a product strategy. For example, an entrant could try to attract a customer by differentiating the quality of its product and service offering from the incumbent supplier (Porter 1980). Note, however, that from the perspective of a new competitor that is trying to induce switching from an incumbent supplier, product quality is not always the most obvious candidate. In many industries (e.g., gasoline retailing, personal computers, retail banking), the core product is approaching commodity status and offers limited room for differentiation (Ovans 1997).

Increasingly, new competitors rely instead on product line breadth (or bundling) as an entry strategy. Specifically, new suppliers offer customers enhanced value though a product or service portfolio whose breadth (1) exceeds what is currently provided and (2) is capable of meeting future needs. There are at least four reasons for this trend.

First, from a buyer's perspective, there are search economies from having all required products or services available from the same source (Hoch, Bradlow, and Wansink 1999; Soyster 1997). For example, a single point-of-purchase and after-sale service ("one-stop shopping") reduces the cost of qualifying suppliers. Moreover, because business customers' purchase decisions are often made at a system rather than product level (Wilson, Weiss, and John 1990), savings in both search and operating costs can be substantial.

Second, bundling may offer buyers enhanced performance to the extent that a given supplier's products incorporate proprietary interfaces. For example, by designing each part with the other parts in mind, a supplier can build a "turnkey" system that enhances performance (Wilson, Weiss, and John 1990).

Third, many markets are characterized by considerable turbulence, as indicated by changing buyer preferences (Fisher 1997; Richardson 1996) and competitive moves (D'Aveni and Gunther 1995; Dickson 1992). From a buyer's standpoint, market turbulence makes it difficult to specify in advance the exact requirements from a supplier (Håkansson 1979; Ward and Webster 1991). Everything else being equal, market turbulence increases the value to customers of suppliers that possess a broad product and/or service portfolio. Specifically, from a customer's viewpoint, a decision to remain in a relationship with a supplier whose product line is more restricted than a competitor's involves substantial risk. The risk involves the current opportunity costs of being in a relationship with an inferior product offering and the future maladaptation costs if the firm's needs change (Balakrishnan and Wernerfelt 1986; Seabright, Levinthal, and Fichman 1992). For example, if the incumbent supplier's line is more restricted than the new entrant's, it may indicate that (1) it is misreading the customers' (future) needs or (2) it is incapable of adapting to new market conditions. In any case, a failure to switch in the short run may require the buyer to incur search and renegotiation costs in the future in order to locate an appropriate supplier.

Fourth, given that product breadth is easily visible to a buyer and can be assessed without preexisting experience with the vendor in question (Guiltinan 1987), it constitutes an attractive entry strategy. Therefore, we propose the following hypothesis:

> H_4: The broader the product range offered by the new potential supplier relative to the incumbent, the higher is the likelihood of customer switching.

Moderating Effects

In the preceding sections, we discuss how a buyer's decision to remain with an incumbent supplier or switch to a new one is influenced by (1) certain aspects of the preexisting relationship with the incumbent and (2) the new competitor's marketing program. We suggest that all these variables have potential effects on a buyer's decision, though the specific nature of the effects is hypothesized to vary.

So far, we have limited our focus to the independent effects of the focal variables. It may be useful to consider, however, whether some of these variables have modifying effects, in the sense that the effect of one depends on the level of another. The extant literature contains some accounts of such effects. For example, the literature on relationship marketing suggests that strong interpersonal relationships should serve as buffers against product and price competition. Thus, we would expect to see a diminishing effect of a competing supplier's marketing variables as interpersonal relationships and switching costs tied to an incumbent supplier increase.

Unfortunately, the extant relationship marketing literature generally has failed to specify the theoretical reasons such effects should be expected. We draw on economic sociology to propose two moderator effects. Granovetter (1992, p. 35, italics added) suggests the general contingency hypothesis that "the mere fact of attachment to others may *modify* economic action" and that attachments may cause a party to remain in a relationship "despite economic advantages elsewhere." Why would this be the case? Theoretically, this may happen because parties recognize different forms of utility. Recall from our previous discussion that buyers receive utility from both attributes of a supplier's marketing program and aspects of the supplier relationship itself (e.g., Burt 1992; Frenzen and Davis 1990). A new potential supplier that offers a superior price may increase the buyer's utility if switching occurs. However, if the buyer in question has developed close personal relationships with the incumbent and/or faces high levels of partner-specific commitments, switching means giving up utility from the preexisting relationship. In turn, this makes switching to a new supplier less likely. If such assessments are made, the hypothesized positive effects of the entrant's superior price on customer switching should decrease as interpersonal relationships and switching costs tied to an incumbent supplier increase.[2] Stated formally,

> H_5: The positive effect of a new potential supplier's superior price on the likelihood of customer switching will be negatively moderated by the presence of (a) close personal relationships and (b) high supplier-related switching costs.

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[2] In principle, it could be hypothesized that price and product breadth attenuate the effect of interpersonal relationships and switching costs. However, we treat switching costs and interpersonal relationships as moderator variables for two reasons. First, treating them as moderator variables is the test of Granovetter's (1992, p. 35) hypothesis that "attachments modify economic action." Second, this treatment is consistent with our perspective of testing whether the efforts of an entrant (that deploys the marketing variables) are modified (technically, moderated) by a preexisting relationship.

A parallel effect is expected for the competing supplier's product line breadth. On the one hand, a broader product portfolio has the potential to increase the buyer's utility and therefore increase the probability of customer switching. On the other hand, if the buyer's representative has developed a close personal relationship with the incumbent and/or faces high switching costs, switching means giving up utility. Thus, the presence of close interpersonal relationships and high switching costs will decrease the positive effect of product breadth on customer switching. Stated formally,

> H_6: The positive effect of a new potential supplier's superior product breadth on the likelihood of customer switching will be negatively moderated by the presence of (a) close personal relationships and (b) high supplier-related switching costs.

Research Method

A conjoint design was used to address the research questions presented in the preceding section. This particular design was chosen for several reasons. The nature of our research questions required a design that enabled us to examine how buyers develop preferences for alternatives (i.e., suppliers) that differed systematically on certain attributes (i.e., marketing and relationship variables). Specifically, a conjoint design enabled us to examine buyers' evaluations of both an incumbent and a potential new supplier.

In our situation, a conjoint design had the additional benefit of requiring respondents to perform a realistic task. Customers in many markets are approached on a regular basis by new suppliers (e.g., Achrol 1997). Our conjoint task was designed to describe the situation faced by a buyer that has an existing relationship but is being approached by a potential new supplier and must make a choice on the basis of a joint consideration of relationship and marketing program attributes.

Before settling on the conjoint design, we also considered a retrospective survey approach. Although survey designs have been used frequently in prior studies of buyer–supplier relationships, we believed that a conjoint design approach possessed several distinct advantages, given the specific nature of our research questions. With a survey design, we would be required to obtain responses from customers that either had been approached by a competing supplier firm (and was in the process of evaluating the offer) or had recently completed such a process. As such, we were concerned that asking questions ex post about their behaviors might introduce retrospective biases because they did not remember the relevant factors and considerations clearly. More seriously, social desirability biases may be introduced (Mick 1996), to the extent that respondents would rationalize their actual choices. Conjoint analysis, which uses hypothetical scenarios, minimizes this problem.

The conjoint design also had an important advantage for estimating the relative importance of the marketing and relationship variables in influencing buyer behavior. Relying on a survey design to assess importance weights would require the respondents to make trade-offs on each of the independent variables directly. When asked directly about relative importance, respondents typically have difficulty making trade-offs (Fornell 1992). In our particular case, social desirability biases may again have been a concern, to the extent that respondents may have failed to give a truthful measure of the impact of interpersonal relationships. The "decompositional" nature of a conjoint task is highly beneficial in this respect, because it does not require the respondents to evaluate any given attribute directly (Murry and Heide 1998). Rather, this information is derived from the respondents' global judgments of the different scenarios.

Research Context

The context for the study is relationships between commercial banks and corporate customers. These exchanges cover credit (e.g., line of credit) and noncredit (e.g., cash management) products. We chose this particular context for several reasons. First, deregulation, technological innovation, and mergers have increased competition both among traditional banks and between banks and nonbank suppliers (Mehra 1996). Thus, customers are frequently required to evaluate new supplier offerings and by implication their incumbent relationships.

Second, initial discussions with managers and reviews of both the academic and the trade literature suggested that our focal theoretical variables all manifest themselves in this setting to varying degrees. With respect to the marketing program variables, the recent mergers have enhanced many suppliers' ability to compete on price. In addition, the merged firms frequently provide a broad range of financial services that are capable of meeting all the needs of individual customers (Hanes 1998). With respect to the relationship variables, some suppliers have implemented formal account management programs that facilitate the development of interpersonal relationships (Perrien, Paradis, and Banting 1995). Finally, switching costs arise because of buyer and supplier investments of various kinds. For example, suppliers sometimes adapt their cash management systems to meet the unique requirements of particular customers. In turn, customers may invest in training their personnel to use the systems and may purchase computer software and supplies that are supplier-specific in nature. Together, these observations convinced us that our focal theoretical variables could be studied in this context.

Development of Conjoint Scenarios

To develop the materials for our study, we initially consulted both the existing literature on buyer–supplier relationships and the trade press. Subsequently, we conducted several personal interviews with managers from both sides of the relationship dyad (two bank and key account managers from the supplier side and two business managers from the customer side). The interviews focused on the key decision criteria used in choosing a financial services supplier. We asked the managers to consider both positive and negative factors influencing choice. These interviews helped us (1) develop the conjoint scenarios, (2) identify key decision makers on both sides of the dyad, and (3) acquire the necessary industry terminology.

From these exploratory investigations, we developed 16 conjoint scenarios (four factors each with two levels), which we subsequently showed to one bank manager, one account manager, and two business managers. On the basis of the feedback received, we modified and revised the conjoint scenarios. Subsequently, we tested them in interviews with another business manager. This pretest revealed no major problems with any of the scenarios or the response format. In total, we devoted approximately 45 hours of personal interviews to developing the conjoint scenarios.

Measures. The four factors that constitute the conjoint task and the levels of each are as follows:

1. Interpersonal relationships
   - Terminate a relationship in which the account manager is unknown.
   - Terminate a relationship in which a close and personal relationship has been established with the account manager.
2. Switching costs
   - Minimal costs incurred by switching to a new bank.
   - Substantial costs incurred by switching to a new bank.
3. Price
   - Same economic terms as those provided by the existing bank.
   - 15% better economic terms.
4. Product breadth
   - Access to the same set of services the firm is currently receiving.
   - Access to a wide range of financial services covering both current and possible future needs.

Our first factor, interpersonal relationships, refers to the existence of a close and personal relationship between the boundary personnel in a buyer and a seller firm (Seabright, Levinthal, and Fichman 1992) and varied according to whether the focal account manager was unknown to the buyer or a close and personal relationship existed. The second factor, switching costs, was defined as the buyer's perceived costs of switching from the existing to a new supplier (Heide and Weiss 1995; Weiss and Anderson 1992). The respondents were instructed to consider all the different switching costs that may apply. The factor levels were minimal and substantial switching costs, respectively.

The third factor, price, described the economic terms offered (e.g., interest and fees on the financial services provided by the supplier). For the first level of this factor, the terms offered by the rival supplier were the same as those received from the incumbent supplier. The second level described a rival supplier that offered a 15% premium. The 15% was decided on from our field interviews with bank and account managers. The fourth factor, product breadth, refers to the breadth of the portfolio of services offered by the supplier. This factor varied in terms of whether the rival supplier only offered the services currently provided by the incumbent or whether a wider range of services was offered that was capable of meeting the customer's future needs.

Sampling and Data Collection

Sampling frame. The initial sampling frame for the study was a list of buyers of corporate financial services provided by a commercial bank. We contacted all midsize customers in one region (a total of 443) personally by telephone to locate an appropriate key informant within each firm.

Key informant selection. Campbell's (1955) criteria of being (1) knowledgeable about the phenomenon under study and (2) able and willing to communicate with the researcher constituted our criteria for informant selection. From the telephone contacts, we identified 114 informants who met these criteria and who verbally agreed to participate in the study (25.7% of 443). The formal titles of the informants within the customer firms were either business manager or general manager. In the remainder of the 443 companies contacted, either an appropriate key informant could not be found within the time constraints imposed by the administration of the study or the relevant person refused to participate in the study. As an additional step toward minimizing informant bias, we included the following question in the survey materials: "What influence do you personally have on your company's decisions regarding choice of bank?" On a seven-point scale, the mean response was 5.8 (standard deviation = 1.4), providing evidence of the quality of our key informants.

To test whether systematic differences existed between buyers and the supplier regarding the hypothesized relationships, we contacted all (39) key account managers at corporate headquarters personally by telephone and asked them to participate in the survey. In total, these account managers were responsible for the 443 customer accounts. Of the 39 key account managers (95%), 37 agreed to participate in the study.

Nonresponse bias. To assess the possibility of nonresponse bias in our data, we compared the final sample with the other firms in the sampling frame with respect to sales volume. We found no significant differences, which suggested that nonresponse bias was not a problem.

Conjoint administration. For each informant who agreed to participate in the study, an appointment was made to conduct a personal interview. A professional marketing research company administered the conjoint experiment. All 114 customers and 37 key account managers who agreed to participate in the study completed the conjoint task.

A full-profile presentation method was chosen to add realism to the conjoint task (Carroll and Green 1995). The managers were asked to envision a situation in which their company had a preexisting banking relationship but was being approached by a new potential supplier. Each scenario described two aspects of an incumbent relationship that may protect the existing supplier and two marketing tools available to the new potential supplier for penetrating the existing relationship. For example, one scenario described a situation in which the buyer would (1) receive the same economic terms as those provided by the incumbent, (2) gain access to a wide range of bank and insurance services, (3) incur minimal switching costs, and (4) terminate a relationship with an unknown account manager. A full-factorial design was used to administer the scenarios.

Each of the 16 scenarios was presented to the managers with verbal descriptions written on cards. In addition to the 16 cards, the managers were given a short description of the decision-making situation and the four factors. The scenarios involved shifting the entire business volume to a new supplier, a so-called lost-for-good scenario (Jackson 1985). The managers first were asked to rank-order the conjoint scenarios by preference. Specifically, they were asked to rank each scenario from 1 to 16, where 1 was the scenario in which it would be most likely that their firm would decide to switch from the incumbent to a new supplier. Next, the managers were asked to rate each hypothetical relationship on a seven-point scale that indicated the likelihood of switching to a new suppler. The scale was anchored by "very unlikely to switch supplier" and "very likely to switch supplier." The rating measure was used in the final analysis. The ranking task was used to facilitate and ensure variation on the rating measure (Alwin and Krosnick 1985; Murry and Heide 1998).

A parallel task was administered to the account managers on the supplier side. Managers were asked to evaluate the hypothetical conjoint scenarios as if they themselves represented a customer. As noted previously, our final sample from the supplier side consisted of 37 managers.

Test of Hypotheses

We tested the hypotheses by estimating two ordinary least squares regression models. We used an effects coding scheme (Cohen and Cohen 1983) to represent the different levels of the factors. Under such a scheme, the first level of each factor (e.g., low switching costs) is coded as –1, and the other (e.g., high switching costs) as +1. Interactions were defined by multiplicative cross-product terms between the relevant factors (Green and DeSarbo 1979). The statistical models involved estimating a buyer's tendency to switch from an incumbent to a new supplier (SWITCH) as a function of interpersonal relationships, switching costs, price, and product breadth. With one exception (discussed subsequently), we tested the same model in both the buyer and supplier samples. Table 1 shows the estimated coefficients (standardized and unstandardized) and associated t-statistics.

Both models explain a sufficient amount of variance to justify examining the individual coefficients (adjusted $R^2 = .35$ and .39, respectively). The results show that interpersonal relationships between buyers and suppliers have a significant and negative effect on a buyer's tendency to switch ($t_{buyer} = -3.64$, $t_{supplier} = -9.03$). This result provides support for H_1. Similarly, firm-level switching costs have a significant and negative effect on a buyer's tendency to switch in both samples ($t_{buyer} = -11.70$, $t_{supplier} = -6.99$), which provides support for H_2.

Price has a significant and positive effect in both samples ($t_{buyer} = 24.14$, $t_{supplier} = 14.77$), consistent with H_3. Also, as we predict in H_4, product breadth has a significant and positive effect on the tendency to switch in both samples ($t_{buyer} = 7.85$, $t_{supplier} = 5.18$).

Consistent with H_{5b}, the interaction between switching costs and price is significant and negative for the buyer sample ($t_{buyer} = -4.42$). A similar result was found for the interaction between switching costs and product breadth in this sample ($t_{buyer} = -1.80$), consistent with H_{6b}. These findings provide support for our hypotheses that the positive effect of an entrant's price and product advantage on switching is attenuated by high levels of supplier-related switching costs. The parallel effects in the supplier sample were both negative, as we predicted, but not significant ($t_{supplier} = -1.10$ and –.67, respectively). None of the interactions involving interpersonal relationships was significant, in contrast with H_{5a} and H_{6a}.

As shown in Table 1, the model for the buyer sample includes an additional term, namely, firm size (operationalized by buyer sales volume). This variable, which was administered only to the buyers, was included in the model for control purposes. Note that because the respondents are evaluating hypothetical buying scenarios, it is impossible to introduce control variables that get at actual aspects of suppliers, markets, or buying situations. The only appropriate controls are ones that may influence the respondents' completion of the conjoint task. Sales volume is a reasonable candidate in this respect, because firm size may be a proxy for professionalism and/or expertise and thus may affect the completion of the task. Here, however, the purpose of the control variable is to account for certain respondent-level characteristics that may influence the dependent variable. As is evident from Table 1, size has a significant and positive effect on a buyer's tendency to switch ($t_{buyer} = 3.67$).

Relative Importance of Factors

From a managerial standpoint, the relative importance of the different factors studied would be of considerable interest. From the perspective of an incumbent supplier, knowledge about the extent to which an interpersonal relationship serves as a switching barrier, or is perceived by a buyer as more important than a new competitor's marketing program, would be of substantial value. Conversely, a new competitor that must decide whether to allocate resources to product development or relationship building would have an inherent interest in knowing which tool has the greater impact on the buyer.

Unfortunately, to the best of our knowledge, existing theory does not enable us to develop strong a priori theoretical predictions about relative effectiveness. It is noteworthy, however, that much competing conjecture exists. The literature on relationship marketing (e.g., Grönros 1987; Gummeson 1987) typically has put much less weight on marketing variables than on relationship features. In contrast, industry evidence often presents a different scenario. For example, a study presented in *Forbes* (Levine 1993, p. 232) reports that "banking customers couldn't care less about relationships. Just tell them what the loan will cost them or what the interest is."

Although we do not offer a priori hypotheses about relative importance, the particular research design used (i.e., a conjoint task) enables us to undertake such comparisons ex post. Specifically, importance weights are computed by dividing each factor's part-worth range by the sum of all the part-worth ranges. The aggregated importance weights for the buyer and supplier sample are shown in Table 2. The importance weights show that systematically different views exist between buyers and suppliers regarding the determinants of switching. Both buyers and suppliers consider price the most important factor influencing the decision to switch ($W_{buyer} = .50$, $W_{supplier} = .40$). However, divergence exists regarding the second most important factor. Buyers place somewhat more weight on the existence of switching costs than suppliers do ($W_{buyer} = .25$, $W_{supplier} = .20$) and view this factor as the second most important one overall. In contrast, suppliers believe that buyers will place more weight on interpersonal relationships when making switching decisions. The derived weight for the interpersonal relationships

TABLE 1
Regression Models

	Switch					
	Buyer Sample			Supplier Sample		
Independent Variable	Unstandardized Coefficient	Standardized Coefficient	t-Value	Unstandardized Coefficient	Standardized Coefficient	t-Value
Interpersonal relationships	–.14	–.07	–3.64**	–.49	–.29	–9.03**
Switching costs	–.44	–.24	–11.70**	–.38	–.23	–6.99**
Price	.91	.51	24.14**	.80	.48	14.77**
Product breadth	.30	.16	7.85**	.28	.17	5.18**
Price × interpersonal relationships	–.002	–.01	–.54	–.004	–.03	–.79
Price × switching costs	–.17	–.09	–4.42**	–.006	–.04	–1.10
Product breadth × interpersonal relationships	–.0004	–.00	–.13	.001	.00	.25
Product breadth × switching costs	–.007	–.04	–1.80*	–.003	–.02	–.67
Size	.00003	.08	3.67**			
		R^2 adjusted = .35			R^2 adjusted = .39	

*$p < .05$.
**$p < .01$.
Notes: One-tailed tests are used because of our directional hypotheses.

TABLE 2
Conjoint Factor Importance Weights

Conjoint Factor	Buyer	Supplier
Interpersonal relationships	.08	.26
Switching costs	.25	.20
Price	.50	.40
Product breadth	.17	.14

variable in the buyer sample is only .08, in contrast with .26 in the supplier sample. As in all conjoint studies, these importance weights should be interpreted with some caution, because they depend on the specific factor levels included in the study.

We report one final set of analyses because of the relatively small size of the supplier sample. Unfortunately, an agreement with a sponsoring organization that endorsed the survey gave us a limited window for data collection, which made it impossible to generate a larger supplier sample. Although the relative importance measures are unaffected by sample size, careful attention should be paid to the various significance tests, because a lack of hypothesis support may be attributable to a lack of statistical power. In this case, however, this may not be an issue because of our reliance on a conjoint design in which each respondent evaluated multiple supplier scenarios. Nevertheless, to explore whether the discrepancies between the buyer and supplier samples were likely to be caused by sample size differences, we drew a random sample of 37 from the buyer sample and reestimated the regression model in that subsample. The results of that model were almost identical to those for the full sample. Specifically, the two interactions involving switching costs, price × switching costs and product breadth × switching costs, remained significant ($t = -2.83$ and $t = -1.79$, respectively). This suggests that (1) the observed differences cannot be explained easily by sample size differences and (2) there are substantive differences between buyers and suppliers.

Discussion

Theoretical Implications

The main objective of this study was to examine the effects of marketing and relationship variables on customer behavior. Although the marketing strategy literature historically has emphasized offensive strategies based on deploying marketing-mix variables, some of the emergent literature on relationship marketing has downplayed the importance of marketing variables compared with dimensions of the relationship itself. To the best of our knowledge, this study represents the first attempt to compare these variables directly and document the effects of competition on an existing relationship.

Consistent with the relationship marketing literature, our results show that customers are influenced by the nature of their relationships with incumbent vendors. As such, relationship history matters, and new vendors do not start with a clean slate. However, our overall pattern of results paints a more complex picture than is currently expressed in the literature.

The customers in our study generally perceived the marketing variables to be more important determinants of switching intentions than the relationship dimensions (interpersonal relationship and switching costs). Specifically, price dominated all of the other factors, and the combined importance weight for price and product exceeded the total weight of the relationship dimensions.

Furthermore, our results showed that important differences existed between types of relationship properties. Specifically, customers attached considerably more weight to firm-level switching costs in deciding to remain with an incumbent vendor. Relatively speaking, the presence of interpersonal relationships did not seem to be an important disincentive to switch suppliers. This result is interesting, particularly in light of the emphasis placed on this factor in the relationship marketing literature.

Similarly, the presence of interpersonal relationships did not diminish the effect of a new competitor's price or product strategy, as often is assumed. Apparently, customers were not willing to make trade-offs between the utility from a marketing program and prior investments in social capital. However, we observed such an interaction for switching costs. Specifically, we showed that the positive effect of a new supplier's superior price or product breadth on switching decreased for higher levels of switching costs. These results suggest that buyers do make joint assessments of different sources of utility (e.g., marketing and relationship variables). They also confirm Dwyer, Schurr, and Oh's (1987) hypothesis that an incumbent relationship can be organized in such a way that it forecloses competing ones. However, our results also show that some relationship characteristics are more effective than others in protecting an incumbent supplier.

The limited effect of interpersonal relationships raises some interesting theoretical questions. Specifically, it may be useful to consider the specific reasons some customers were willing to switch to a new supplier and sacrifice existing social capital. We believe that one possible explanation is the different roles played by an individual within a relationship.

In Montgomery's (1998) terminology, the managers in the customer firms studied are both (1) businesspeople who are asked to maximize profits for their employer and (2) friends of the supplier's representative who may feel an obligation to cooperate by maintaining the relationship. Historically, the relationship marketing literature has emphasized the latter and implicitly assumed that the utility derived from interpersonal relationships is universally important. Recently, Montgomery (1998) challenged the common assumption of a "unitary actor" and argued that different situations evoke different roles. In our context, a customer's role as friend may assume less importance in the presence of explicit competitive offers. In general, our results suggest that claims about the importance of relationships should be made cautiously and on the basis of the specific roles and contextual factors at hand.

Finally, our study documents whether buyers and suppliers within an ongoing relationship have convergent perceptions regarding marketing and relationship variables. By administering the conjoint task to both sides of the buyer–supplier dyad, we were able to document that systematic differences existed between the two parties. Most important, suppliers seem to have inflated perceptions of the importance of interpersonal relationships compared with buyers.

Managerial Implications

Despite the general acceptance of the relationship marketing concept, there is considerable evidence that shows that efforts to establish long-term customer relationships often fail. In highly competitive markets, knowledge of why customers decide to dissolve a relationship is key to achieving a strategic advantage. By understanding the determinants of dissolution, a firm can identify the issues that must be addressed in order to prevent future defections. Our study identified large discrepancies between buyers and suppliers regarding the determinants of switching. This suggests that buyers and suppliers have different perceptions regarding the factors needed to maintain successful interfirm relationships.

Our results suggest that both existing and new suppliers must offer competitive terms to be considered possible partners. Although managers frequently believe that long-lasting relationships will reduce customers' price sensitivity (Perrien, Paradis, and Banting 1995), it is also plausible that dealing with the same supplier for a long time may increase customers' price expectations. Specifically, Kalwani and Narayandas (1995, p. 5) argue that "in long-term relationships, customers expect the few selected suppliers to pass on the benefits of lower costs in the form of price reductions over time." Thus, when new competitors accommodate these expectations by offering lower prices, a customer's incentive to switch may be even larger than what the objective price difference between the competing suppliers should indicate.

We also showed that firm-level switching costs have a key influence on switching behavior. However, we add a few words of caution regarding strategies designed to increase such costs. A fear of dependence may discourage some customers from establishing a close relationship in the first place. For example, customers that need to make investments in supplier-specific assets face the risk of subsequent supplier opportunism in the form of price increases (e.g., Williamson 1996).

Deploying strategies based on customer switching costs may also create risk for a supplier, to the extent that it underestimates the actual switching barrier faced by a customer. For example, suppliers that use price cuts to attract customers in anticipation of future lock-in must have a clear picture of the ease with which the customer in question can locate alternative suppliers in the future (Shapiro and Varian 1999).

From a practical viewpoint, it may be surprising that customers attached the least importance to interpersonal relationships. Historically, both academicians and practicing managers have considered social rewards the glue that holds relationships together. However, from a resource allocation viewpoint, our results suggest that a supplier's best option may be to create switching costs at the firm level. At the same time, our results do not suggest that an incumbent supplier can refrain from providing competitive terms. Customers attach considerable weight to immediate price advantages. As such, price may be the strongest competitive tool available to a new entrant that wishes to undermine an existing relationship.

Limitations and Further Research

Some limitations of the current research should be noted. First, for theory-testing purposes, we decided to test our hypotheses in one particular (and homogeneous) context, namely, business-to-business services. Restricting our sample in this fashion served the dual purposes of (1) controlling extraneous sources of variation and (2) developing grounded measures. However, while this industry is both large and growing (Berry 1999), caution should be used in extrapolating our results to other contexts. For example, although recent studies (Petersen and Raghuram 1994; Uzzi 1997) indicate that interpersonal relationships play an important role in banking relationships, a promising avenue for further research would be to test the relative effect of these relationships in other nonservice industries.

Second, although the conjoint design used possesses several distinct advantages, it simplifies some of the focal phenomena. For example, we implicitly treated interpersonal relationships as a unidimensional concept, but other dimensions may also influence the tendency to switch suppliers, such as those the sociology literature identifies: sociability, approval, prestige, trust, reciprocity and power (e.g., Granovetter 1992). On a related note, it is possible that fundamentally different categories of relationships exist, which may have implications for customer switching. Recall that our current focus was the two extreme modes that are identified in the embeddedness literature, namely, relationships with no social content and relationships that are close and personal in nature. Conceivably, however, other constellations may also be observed, such as professional relationships that are not personal in nature. Further research could be directed usefully toward exploring how switching tendencies manifest themselves in such a scenario.

Furthermore, the nature of the conjoint task required us to limit our focus to one particular dependent variable, namely, switching behavior. A promising avenue for further research is to expand the current framework to include other aspects of buyer behavior. For example, concerns about switching may induce a buyer to renegotiate terms with the incumbent before making the final decision. As such, an interesting question is whether some of the variables in the present study influence a buyer's desire to renegotiate with an incumbent supplier or whether a given variable has similar effects on renegotiation and switching.

As an example, consider the possible effects of switching costs. Our results suggest that the existence of high firm-level switching costs represents a disincentive for supplier switching. Conceivably, in lieu of switching, buyers in such relationships may use a competing offer to renegotiate with the incumbent. Notice, however, that the presence of high switching costs places the buyer at a considerable bargaining disadvantage (Weiss and Anderson 1992; Williamson 1975). Under such conditions, switching may be a noncredible threat, and a buyer's renegotiation efforts may be constrained.[3]

Finally, the observed differences between buyers and suppliers raise some intriguing questions. Although our present data do not enable us to identify unambiguously the specific sources of these differences, we believe that they are due in part to the parties' different positions in the value chain. For example, Ring and Van de Ven (1994) describe how a firm's perception of a particular situation and/or exchange partner is a function of its own role in the relationship. Furthermore, because firms act on these perceptions, they ultimately determine the functioning of the relationship itself (Schuman 1982). An important question for further research is how firms' role perceptions become aligned. Embeddedness (e.g., Granovetter 1985) and game theory (e.g., Axelrod 1984) suggest that the time dimension of a particular relationship may have an impact because of the ability of socialization processes and patterns of interaction to promote convergence. At the same time, participation in other relationships may have the opposite effect, to the extent that these relationships promote other roles. Documenting the specific sources of perceptual differences across a dyad is a promising area for further research.

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[3] Interpersonal relationships may also constitute a renegotiation barrier, though for different reasons. In Bonoma's (1976) terminology, a strong bond between boundary personnel reflects the presence of a so-called bilateral power system, in which the individual parties' utility functions are replaced by a global utility function for the relationship as a whole. Such systems tend to be governed by particular norms, which promote relationship-oriented behaviors and discourage actions that advance the interests of the individual parties. Depending on the history of a particular relationship, or the manner in which past exchange "episodes" (Ford 1990) have been conducted, renegotiation may be an unlikely strategy.

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Rajdeep Grewal & Patriya Tansuhaj

Building Organizational Capabilities for Managing Economic Crisis: The Role of Market Orientation and Strategic Flexibility

Firms around the world often must manage and survive economic crises. Recent cases in Asia, Eastern Europe, and South America bear testimony to this point. As economic weak spots are integrated into the global economy, it is timely to develop an understanding of organizational capabilities that can help firms manage their way through such crises. The authors investigate the role of market orientation and strategic flexibility in helping Thai firms manage the recent Asian crisis. The results demonstrate the contingent nature of the influence of market orientation and strategic flexibility on firm performance after a crisis has occurred. As hypothesized, market orientation has an adverse effect on firm performance after a crisis. This effect is moderated by demand and technological uncertainty and is enhanced by competitive intensity. In contrast, strategic flexibility has a positive influence on firm performance after a crisis, which is enhanced by competitive intensity and moderated by demand and technological uncertainty. It seems that market orientation and strategic flexibility complement each other in their efficacy to help firms manage varying environmental conditions.

Organizations frequently must cope with anomalous events, referred to as crises, that create high levels of uncertainty and are potential threats to the viability of an organization. The past decade, for example, has witnessed tremendous economic upheavals that have manifested in economic crises, such as the crashes of the Mexican peso, the Russian ruble, and the Brazilian real. Organizational crises have been extensively researched from divergent perspectives, including those of psychology (Halpern 1989), social polity (Weick 1988), and technological structure (Pauchant and Douville 1994). We add to this body of research by studying the relevance of market orientation and strategic flexibility in determining firm performance in developing economies and during periods of economic crisis; we investigate these relationships in the context of the recent Asian economic crisis.

Literature on the Asian crisis (see Champion 1999; Goad 1999) emphasizes, in general, the need to "better manage" but does not underscore the specifics of this better management. We adopt a resource-based perspective to identify organizational capabilities that would help firms manage their way out of an economic crisis (see Barney 1991; Dickson 1992; Hunt and Morgan 1995). Resources embody "stocks of knowledge, physical assets, human capital, and other tangible and intangible factors that a business owns or controls, which enable a firm to produce, efficiently and/or effectively, market offerings that have value for some market segments" (Capron and Hulland 1999, p. 42). In turn, the firm uses the capabilities developed by resource utilization to manage its environment and perform (Day 1994). Two such capabilities are market orientation and strategic flexibility.

Central to the development of high-caliber marketing practice is the construct of market orientation (Day 1994; Kohli and Jaworski 1990). Being market oriented implies delivering products and services valued by consumers, usually accomplished through (1) ongoing monitoring of market conditions and (2) adaptation of organizational responses (Narver and Slater 1990; Shapiro 1988). Top management plays a critical role in fostering market orientation (Webster 1992), and market orientation influences organizational performance, commitment, and motivation (Jaworski and Kohli 1993). Given the importance of market orientation, it comes as no surprise that this construct has received scrutiny from marketing scholars.

The past decade has witnessed an increase of interest in strategic flexibility, which bestows on a firm the ability to respond promptly to market opportunities and changing technologies (Sanchez 1995). Technological advances in diverse fields such as communication and transportation have endowed organizations with the ability to carry out real-time market research, reduce new product development time and costs, offer a wider product line, mass customize products, and upgrade products at a faster pace than ever before (Kotha 1995). Again, the development of capabilities to be flexible rests on the mandate of top management, helps firms manage environmental uncertainty, and tends to enhance firm performance (Evans 1991).

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However, there are at least two limitations of current research on both market orientation and strategic flexibility that preclude researchers from claiming their centrality to the field of marketing. First, researchers primarily have examined the two constructs in the context of organizations in either the United States or Western Europe. As the number of emerging economies in Asia, Eastern Europe, and South America grows, generalizability of market orientation and strategic flexibility rests on the constructs' applicability to the developing world. Our research takes a step in this direction by examining the performance consequences of these constructs for firms in Thailand. Second, research on market orientation and strategic flexibility has concentrated on the normal course of a firm's business and as a result has ignored the constructs' impact on the firm's ability to manage crises. Because of increasing globalization and the emergence of the network economy (Achrol and Kotler 1999), sooner or later economic crises are going to have a direct or indirect effect on almost every firm. Thus, it is essential to develop an understanding of organizational capabilities that will help firms manage an economic crisis. Our research examines the role of market orientation and strategic flexibility in helping Thai firms manage the recent Asian economic crisis. By studying both market orientation and strategic flexibility, we hope to shed light on the resource allocation decision between these two organizational capabilities. The practical implications from our theoretical model and its empirical examination should provide managers with concrete lessons for devising strategies in crisis situations.

Conceptual Background and Research Hypotheses

In this section, we review literature on (1) economic crises, (2) market orientation, and (3) strategic flexibility to develop our hypotheses. The literature on economic crises helps us crystallize the challenges that organizations face in managing the critical event of an economic crisis. In contrast, literature on market orientation and strategic flexibility provides a means for these organizations to manage this critical event.

Economic Crisis

A crisis represents "a low probability, high impact situation that is perceived by critical stakeholders to threaten the viability of the organization" (Pearson and Clair 1998, p. 66). The significant impact of crises, which may be manifested in the firm's demise, makes it critical for managers to understand and effectively manage these events. Crises come in many forms, including natural disasters such as earthquakes and meteor showers, technological disasters such as the fervor regarding the Y2K computer bug, firm-level crises such as labor strikes, and economic crises such as the one in Asia in 1997. Our research focuses on economic crises and firm-level strategies for managing them (henceforth, we use "crisis" to refer to "economic crisis").

Economic crises are inexorably linked to the concept of business cycles (sometimes referred to as crisis cycles; Mattick 1981), which have continued to befuddle scholars since the beginning of the nineteenth century. Macroeconomics giants, including Keynes (1936), Mathews (1959), and Schumpeter (1939), expended considerable effort to understand these elusive cycles and the ensuing crises. Indeed, the primary criticism of capitalism in Marx's *Das Kapital* and by subsequent proponents of Marxist thinking (see Mandel 1980) is centered on the contraction phase of business cycles.

Even though much research has been carried out to understand the advent of business cycles and the ensuing periods of expansion and contraction, they remain an enigma (Sharma 1999). The complications stem from the existence of many different cycles, including those with 50–60-year waves, 15–25-year waves, 6–10-year waves, and 40–60-month waves (Mullineux 1984). After adding these cycles, economists must take general trends (for example, an upward trend for a growing economy), along with interdependencies among national economies (which may have different general trends and/or cyclical waves) and external shocks (such as natural disasters), into consideration to get a measure of the complexity involved in predicting and understanding business cycles. However, not all periods of contraction (or troughs in a cycle) are classified as crises. Crises refer to contractions in which real output decreases, not to periods of slow growth. Therefore, it comes as no surprise that it is difficult to predict and gauge the influence of these economic crises.

Furthermore, there is little consensus as to the reasons for the manifestation of economic crises. Whereas the Great Depression of the 1930s was characterized as a Keynesian crisis (i.e., chronic insufficiency of demand) and the oil shock of 1970s was attributed to an external shock, the Brazilian crisis of the 1980s was blamed on governmental failures (excessive and distorted growth of the state), and the recent Asian crisis was considered a culmination of antiquated banking practices and idiosyncratic cultural elements, such as lack of transparency (Aggarwal 1999; Alon and Kellerman 1999; Pereira 1996). However, crises are characterized by the co-movement of many macroeconomic indicators, including decreases in real output (measured by real gross domestic product [GDP]), high levels of inflation and unemployment, and an unstable currency.

The organizational crisis literature focuses on myriad factors that influence strategies for crisis management, including the psyche of managers, the nature of crisis-triggering events, organizational structures and processes, and environmental variables (Pearson and Clair 1998). Research on the organizational response, however, has primarily focused on industrial crises (Smith 1990). Industrial crises, such as those related to negative consequences of product consumption (e.g., the silicon breast implants of Dow Corning) and industrial accidents (e.g., the 1984 Union Carbide gas leak incident in Bhopal, India), usually influence a single firm at a time. Unlike industrial crises, which influence a firm or an industry, economic crises affect a country (e.g., Mexico in 1994) or a region (e.g., Asia in 1997). Furthermore, industrial crises usually involve a struggle for legitimacy, in which organizational moral and ethical standards are subject to public scrutiny (Pauchant and Douville 1994). In contrast, economic crises alter demand patterns, thereby testing organizational marketing skills (Block 1979). In addition, organizational research has not examined the significance of market orientation and strategic flexibility, both of which are considered important organizational capabilities and critical for competing effectively in the marketplace. Research on organizational crises (D'Aveni and MacMillan 1990) shows that surviving firms, in comparison with failing firms, focus on both external and internal environments, which is a critical feature of market orientation (Kohli and Jaworski 1990), and the attainment of a balance between the two environments, which is an important aspect of strategic flexibility (Volberda 1996).

Scholars assert that the environmental context interacts with organizational capabilities to influence firm performance (Houston 1986; Lusch and Laczniak 1987). Research on market orientation has examined the interactional effects of the facets of the environment and market orientation on firm performance (e.g., Jaworski and Kohli 1993; Slater and Narver 1994). In an ordinary course of events (without a crisis), firms develop capabilities to manage their environment. Organizational investments in these capabilities should reflect the firm's environmental needs (Clark, Varadarajan, and Pride 1994). In environments characterized by high uncertainty, for example, a firm will face many diverse situations and should invest more in being flexible (Harrigan 1985).

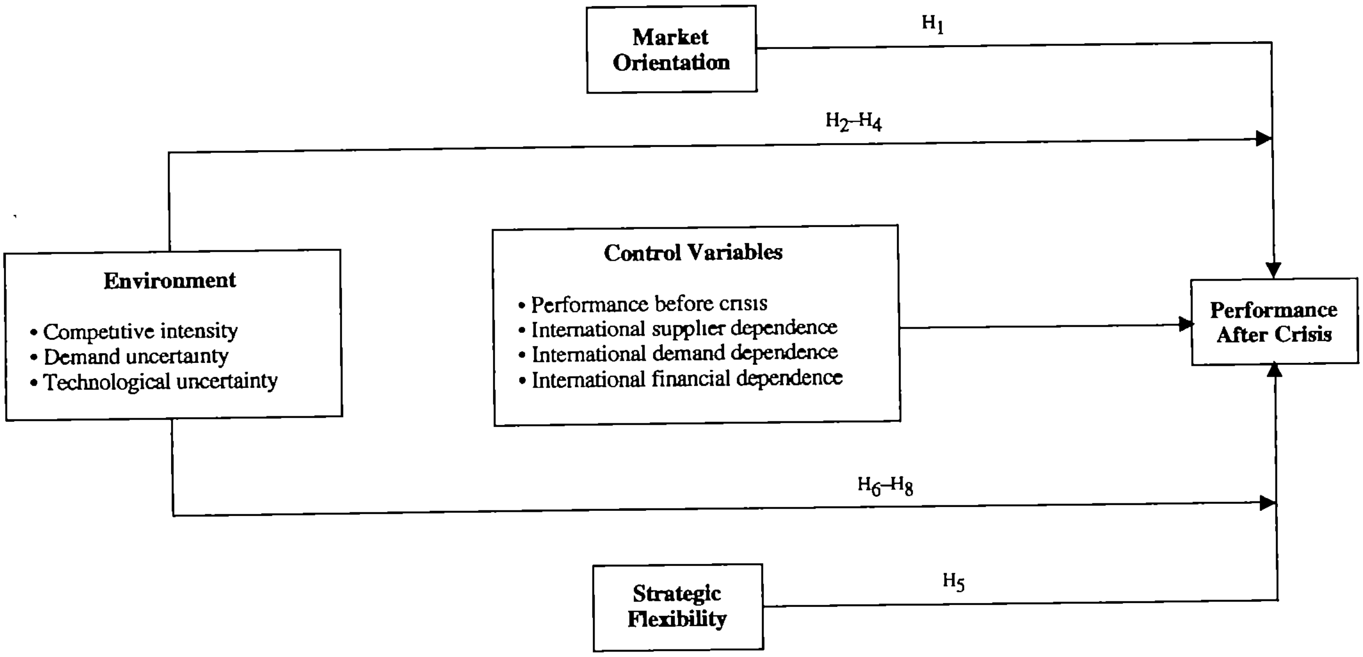
Thus, a firm develops its capabilities to maximize performance (we refer to this as performance before crisis) during the normal course of its activities. The firm uses these capabilities to manage crises (i.e., performance after the crisis has occurred, henceforth referred to as performance after crisis). Therefore, drawing from contemporary research on market orientation, we examine three facets of the environment: competitive intensity, demand uncertainty, and technological uncertainty (Kohli and Jaworski 1990). These three facets provide a comprehensive theorizing of organizational environments (Clark, Varadarajan, and Pride 1994).

It is important to emphasize that an economic crisis does not influence all firms in a similar manner. If a firm has foreign customers, for example, it may benefit from a crisis. However, if the firm has foreign suppliers, it might suffer and may need to look for alternative sources of supply. Likewise, as a crisis influences the currency exchange rates, the nature of a firm's debt becomes important. In a similar vein, a firm's performance before crisis should affect its performance after crisis (Kuran 1988). Therefore, we cannot apply the macroenvironmental phenomenon of an economic crisis homogeneously at the firm level. To conceptualize crises at the firm level, we control for a firm's performance before crisis and reliance on international suppliers, international demand, and international financial institutions. By controlling the organizational context, we customize a crisis for a firm and thereby conceptualize it at the firm level. We present our theoretical model in Figure 1, which summarizes the hypotheses pertaining to market orientation and strategic flexibility. Next, we develop these hypotheses.

Market Orientation

Market orientation represents the implementation of the marketing concept, an important cornerstone of the marketing discipline (Barksdale and Darden 1971; Felton 1959; McNamara 1972). A "market oriented organization is one whose actions are consistent with the marketing concept"

FIGURE 1
Conceptual Model



(Kohli and Jaworski 1990, p. 1). Contemporary research on market orientation focuses on (1) its definition and conceptualization (Jaworski and Kohli 1993; Narver and Slater 1990), (2) its antecedents and consequences (Jaworski and Kohli 1993; Slater and Narver 1994), (3) its influence on employee attitudes (Siguaw, Brown, and Widing 1994), and (4) its measurement (Deshpandé and Farley 1998; Kohli, Jaworski, and Kumar 1993).

Following the work of Jaworski and Kohli (1993; Kohli and Jaworski 1990; Kohli, Jaworski, and Kumar 1993), we conceptualize market orientation in terms of the activities of information generation, information dissemination, response design, and response implementation. Information generation captures the organizational emphasis on gathering information on current and future customer needs, information dissemination is the degree of sharing of information across departments, and response design (the use of market intelligence in planning) and implementation (execution of the plans) assess organization-wide responsiveness.

A standard argument in the market orientation literature suggests that market-oriented firms are in a better position to satisfy the needs of their customers (Narver and Slater 1990). Empirical research in the U.S. context supports this assertion (e.g., Jaworski and Kohli 1993; Lusch and Laczniak 1987; Slater and Narver 1994). Therefore, researchers expect market orientation to be manifested in enhanced firm performance (i.e., under the normal course of events), at least in the U.S. context.

According to Hofstede's (1980) cultural dimensions, Thailand is similar to its Asian neighbors and clearly different from Western countries, where most market orientation research has been undertaken. Yet a recent empirical study of Thai managers' attitudes toward market orientation supports the centrality of this construct for Thai firms (Powpaka 1998). Managers of Thai firms and those in other Asian countries have adopted U.S. business practices in recent years. The widespread acknowledgment of U.S. business school models is homogenizing managerial thinking and market-based practices (e.g., the use of a market orientation) across nations (see Doremus et al. 1998). The role of world bodies, such as the World Bank and International Monetary Fund, reinforces this thinking, because the United States is the primary contributor to these bodies and therefore exerts a high level of control over them. The preeminent position of U.S. consulting firms in Thailand further strengthens this line of reasoning (see Mertens and Hayashibara 1998). Therefore, market orientation should have a positive influence on firm performance in noncrisis situations for Thai firms.

Meanwhile, we expect market orientation to have a negative influence on firm performance after crisis. Research on market orientation also shows that excessive customer orientation, an important aspect of market orientation, can be harmful for organizations (see Bennett and Cooper 1979; Frosch 1996; Macdonald 1995). For example, Christensen and Bower (1996, p. 198) conclude from their analysis of the hard disk drive industry that "firms lose their position of industry leadership ... because they listen too carefully to their customers." Similarly, Hamel and Prahalad (1994, p. 99) view this customer orientation as the "tyranny of the served market" and think of customers as "notoriously lacking in foresight." In defense of market orientation, Slater and Narver (1998, p. 1003; also see Connor 1999; Slater and Narver 1999) point out that in comparison with customer-oriented firms, market-oriented firms "scan the market broadly, have a longer term focus, and are more likely to be generative learners." In a similar vein, Jaworski, Kohli, and Sahay (2000) theorize market orientation as both market driven and market driving. The focus of market orientation is on both expressed and latent customer needs, unlike customer orientation, which focuses only on expressed customer needs (Slater and Narver 1998). Market orientation also stresses learning from and monitoring competitors' capabilities and plans, as opposed to customer orientation, which neglects competitors.

Market orientation is indeed a learning process in which organizations learn from all aspects of their environment, including customers and competitors, and take both short- and long-term organizational goals into consideration (Kohli and Jaworski 1990). Market orientation captures organizational learning from the environment, and organizations derive benefits from this learning (Slater and Narver 1995). However, we do not expect this learning to be useful in crisis situations for at least two reasons. First, because crises are unique, low-probability situations, firms do not encounter them frequently and therefore cannot learn about them in advance. Second, learning from nonunique crisis situations is less likely to prove useful because firms rarely encounter these situations, do not have ample opportunity to use their learning about crises, and therefore should be less motivated to learn.

Crises also "defy interpretations and impose severe demands on sensemaking" (Weick 1988, p. 305). It is possible that even an organizational capability as powerful as market orientation may not be able to capture the rare circumstances that organizations can face in a crisis. Highly attuned market orientation would cause firms to lock into a standard mode of cognition and response, thereby building inertia instead of the creative thinking needed to manage crises (Day 1994; Scott 1987). In the context of reactions to competitive threats, Chandrashekaran and colleagues (1999) show that it is fairly easy and common for firms to steer into such inertia. At least three factors contribute to creating inertia. First, managerial bias toward the status quo creates inertia by enhancing the preferences for tested and institutionalized business models (Ritov and Baron 1992). Second, research on bounded rationality recognizes the cognitive limitations of managers and organizations and the difficulties those limitations create in evaluating new business models, specifically in high-turbulence situations such as crises (Dickson 1992). Third, sunk cost fallacy, driven by the human tendency to be more averse to losses than gains, contributes toward creating barriers to change time-tested techniques and procedures (Kahneman and Lavallo 1993). Market orientation contributes to organizational success (Jaworski and Kohli 1993; Slater and Narver 1994) and entrenches business models, thereby creating inertia. Thus, we expect market orientation to have an adverse effect on firm performance in the face of a crisis.

H_1: The greater a firm's market orientation, the lower will be the level of firm performance after crisis.

Interactions Between Market Orientation and Facets of the Environment

Competitive intensity. Competitive intensity, the degree of competition that a firm faces, has been purported to moderate the influence of market orientation on firm performance. As competitive intensity increases, so does a firm's need to be market oriented (Houston 1986). Therefore, in highly competitive environments, greater emphasis on market orientation is required for better performance (Kohli and Jaworski 1990).

Firms in highly competitive environments focus considerable attention on competitors. In these markets, firms often assume that competitors' actions are optimal and mimic them (Day and Nedungadi 1994; Day and Wensley 1988). Such mimicking should not pay off in a crisis situation, because the idiosyncratic challenges of a crisis should also befuddle competitors. In addition, a crisis represents an anomaly and has the potential to change the very basis of competition. Firms that get locked into precrisis assumptions of competition are likely to be at a disadvantage. Arthur (1989), for example, discusses the way small, chance events result in nonoptimal decisions (e.g., the "QWERTY" typewriter keyboard) and have a lingering, long-term influence on organizational activities. Likewise, DiMaggio and Powell (1983) note how the pressures of professionalization are manifested in similar thinking across firms, which leads to institutionalized business models. Similarly, firms in highly competitive environments focus more on learning about competitors, which is a key aspect of market orientation (Han, Kim, and Srivastava 1998), and over time this learning becomes institutionalized. Organizations that are market oriented are more likely to be locked into institutionalized thinking about competitive behaviors. This type of thinking becomes a greater burden as competitive intensity increases, because the need for an appropriate response to competitors is greater in highly competitive environments (Jaworski and Kohli 1993). Thus, as competitive intensity increases, we expect the negative relationship between market orientation and firm performance to become stronger.

H_2: The greater the competitive intensity, the stronger will be the negative relationship between market orientation and firm performance after crisis.

Demand uncertainty. Demand uncertainty captures the variability in customer populations and preferences, which requires organizations to adapt their product offerings, plans, and strategies to the changing demand conditions. Market orientation helps firms track these changes in the consumer environment and should aid in managing this uncertainty. As the demand uncertainty increases, so does a firm's need to be market oriented. Therefore, researchers posit that the positive relationship between market orientation and firm performance should become stronger as demand uncertainty increases (Jaworski and Kohli 1993; Slater and Narver 1994).

In the long run, an economic crisis may change the nature of consumer demand. Usually, economic crises manifest themselves in high inflation and tend to make consumers more price-sensitive (Block 1979). As a result, consumers (1) resort to greater information search, (2) postpone their purchase decisions, or (3) switch brands. Congruently, a major decline in the sales of consumer durable products, such as automobiles and household appliances, occurred during the recent Asian economic crisis, perhaps because of postponement of purchase (Hla 1999) and/or high rates of brand switching (see Siam Commerce 2000). Similar consumer behaviors were reported in South Korea. Korean students, for example, switched from a U.S. educational institution to a Korean university for their undergraduate studies (Woodard 1998). In the short run, economic crises may cause consumers to move downward on the demand curve and buy at a lower price or to purchase less quantity at the same price. Research on consumer behavior shows that consumers learn from experience, and this learning affects their future behavior (Hoch and Deighton 1989). Therefore, in addition to the temporary effects of crises on consumer behavior, the changes in consumer behavior, such as increased price sensitivity of consumers, postponement of purchase decisions, increased consumer information search, and brand switching, can have far-reaching, long-term implications and perhaps even alter the nature of the demand.

Market-oriented firms in high–demand uncertainty environments are more accustomed to monitoring consumers and therefore, with their focus on the consumer, should be in a better position to make the adjustments necessary to tap into the new demand curves (Slater and Narver 1995). The nature of demand is inherently complex in high–demand uncertainty markets. A crisis is likely to complicate these markets further, because it will directly affect the demand pattern (e.g., a rise in inflation makes some consumers more price sensitive; they therefore resort to greater information search). The market orientation skills of a firm are critical and are subjected to a Herculean examination in crisis-torn, high–demand uncertainty markets. After an economic crisis, market orientation is even more important in markets characterized by high levels of demand uncertainty as opposed to low–demand uncertainty markets. Therefore, we expect demand uncertainty to moderate the negative effect of market orientation on firm performance after crisis.

H_3: The greater the demand uncertainty, the weaker will be the negative relationship between market orientation and firm performance after crisis.

Technological uncertainty. Both the pace and degree of innovations and changes in technology induce technological uncertainty. Often organizations use technological orientation as an alternative means to market orientation to build sustainable competitive advantage (Kohli and Jaworski 1990). Even though a balance between an emphasis on technological orientation and one on market orientation is possible, firms in high-technology markets tend to allocate greater resources to technology to manage the uncertainty created by technological changes (Glazer 1991; Slater and Narver 1994). Emphasis on technological orientation as a means of competing should reduce the importance of market orientation. The positive relationship between firm performance and market orientation should weaken as technological uncertainty increases (Jaworski and Kohli 1993).

The effect of an economic crisis on reducing consumers' buying power and altering the basic demand pattern makes market orientation even more critical for two reasons. First, consumers become more price sensitive, which thereby reduces the importance of relatively expensive, technologically advanced products (Bass 1995). Second, the increased price sensitivity makes organizational ability to satisfy consumer needs even more critical. Furthermore, firms in markets characterized by high technological uncertainty, compared with firms in markets characterized by low technological uncertainty, compete more on the basis of technology than on the basis of market orientation (Hayes and Wheelwright 1984). The increased importance of market orientation due to the crisis and the dearth of market orientation capabilities should make market orientation a valued capability. Therefore, we expect technological uncertainty to moderate the negative influence of market orientation on performance after crisis.

> H_4: The greater the technological uncertainty, the weaker will be the negative relationship between market orientation and firm performance after crisis.

Strategic Flexibility

Strategic flexibility represents the organizational ability to manage economic and political risks by promptly responding in a proactive or reactive manner to market threats and opportunities, thereby making it possible for firms to resort to what Ansoff (1980) terms "surprise management." Usually built by means of a flexible resource pool and a diverse portfolio of strategic options, strategic flexibility enables firms to manage uncertain and "fast-occurring" markets effectively (Aaker and Mascarenhas 1984). Strategic flexibility is expected to increase the effectiveness of communications, plans, and strategies, which, coupled with adapted product offering and other aspects of marketing mix, should enhance firm performance (see Miles and Snow 1978).

It is best to consider strategic flexibility a polymorphous construct; that is, the exact meaning and conceptualization of strategic flexibility varies from one context to another (Evans 1991; Young-Ybarra and Wiersema 1999). To study strategies for exiting markets, for example, Harrigan (1980) theorizes strategic flexibility as a firm's ability to redeploy its assets without friction and discusses how this flexibility helps firms overcome exit barriers in declining industries. Similarly, Sanchez (1995) conceptualizes strategic flexibility in the context of product competition as comprising (1) the flexibility inherent in product-creating resources (resource flexibility) and (2) flexibility in using these available resources (coordination flexibility). Likewise, Evans (1991) proposes the offensive/defensive dichotomy for strategic flexibility, in which offensive strategic flexibility aims to create and seize an initiative and defensive strategic flexibility guards against unforeseen competitive moves and environmental eventualities.

In the case of economic crises, the appropriate form of strategic flexibility is reactive. Because the extent, nature, and timing of a crisis are difficult to predict, proactive offensive action to manage the crisis is unlikely, but reactive strategic flexibility capability should be useful. Organizations develop reactive strategic flexibility (henceforth, we use the term "strategic flexibility" to refer to "reactive strategic flexibility") by building excess and liquid resources (Cyert and March 1963) and creating the capacity to be agile and versatile (Evans 1991). One way for a company to build excess resources is to hedge its options, which is related to organizational slack (the buffer for managing environmental uncertainty) and should mitigate the loss potential of a crisis (Eppink 1978). Liquid assets involve minimal switching costs to convert them to alternative forms and are reflected in the overall organizational emphasis on managing political, economic, and financial risks (Jones and Ostroy 1984). To achieve agility and versatility, organizations instill capabilities for responding to diverse scenarios. Such capabilities are built by placing emphasis on the management of environmental diversity and variability (Evans 1991).

Similar to most resource allocation decisions, opportunity costs are associated with the resources used in building strategic flexibility. Organizations building these resources foreclose other opportunities and means of making profits, such as deriving benefits from scale economies. Therefore, in the normal course of events, when a firm does not need to respond reactively to environmental eventualities, we expect strategic flexibility to have an adverse influence on firm performance (Levitt 1983; McKee, Varadarajan, and Pride 1989).

However, when the benefits of adapting outweigh the gains from standardized strategy, as in crisis situations, strategic flexibility capabilities are likely to be useful. Crises offer greater contingencies and uncertainties to organizations by altering most aspects of competition. A firm's ability to alter and adapt its programs and strategies is likely to come in handy. (Indeed, the economists who study organizational management of business cycles have laid the foundation for work on strategic flexibility; see Hart 1937; Kindleberger 1937; Stigler 1939.) Therefore, we expect strategic flexibility to be manifested in enhanced firm performance after crisis:

> H_5: The greater a firm's strategic flexibility, the higher will be the level of firm performance after crisis.

Interactions Between Strategic Flexibility and Facets of the Environment

Competitive intensity. Competitive intensity, the degree of competition a firm faces, requires firms to take a flexible approach so that they can adapt and improvise to put their best foot forward (Moorman and Miner 1998). In conditions of low competitive intensity, investments in flexible resources and strategic options are not useful, because an organization is less likely to face circumstances that require the use of these resources. In contrast, in highly competitive environments, strategic flexibility is a valuable asset (Aaker and Mascarenhas 1984).

A crisis represents an anomaly and has the potential to change the very basis of competition. Firms that have the flexibility to respond to new competitive behaviors are at a definite advantage; they can easily redeploy critical resources and use the diversity of strategic options available to them to compete effectively. Thus, as competitive intensity increases, we hypothesize that the positive relationship between strategic flexibility and firm performance after crisis should be strengthened.

H_6: The greater the competitive intensity, the stronger will be the positive relationship between strategic flexibility and firm performance after crisis.

Demand uncertainty. Demand uncertainty creates difficulty in assimilating information and devising strategic plans. Managing uncertain environments requires concerted deployment of resources devoted to the product-market operations and response to demand idiosyncrasies. Strategic flexibility, by definition, emphasizes answering to the unique needs of consumers, business partners, and institutional constituents (Allen and Pantzalis 1996). Because firms are more likely to face challenging and unique situations in uncertain markets than in stable markets, strategic flexibility should be more useful in these uncertain markets.

Nonetheless, an economic crisis alters the demand characteristics. A firm may be unaware of the new nature of demand or may never have faced the new demand conditions. Even a flexible portfolio of options is unlikely to contain a remedy for the crisis, because it is a low-probability anomaly (Bowman and Hurry 1993). As a result, firms must learn (as manifested in market orientation), not just respond in a flexible manner with an existing toolkit. Therefore, we expect demand uncertainty to moderate the influence of strategic flexibility on firm performance.

H_7: The greater the demand uncertainty, the weaker will be the positive relationship between strategic flexibility and firm performance after crisis.

Technological uncertainty. Variability in technology stemming from innovations contributes to technological uncertainty. Strategic flexibility involves capability building to respond quickly to changing market conditions. Such capability building usually involves investing in diverse resources and possessing a wide array of strategic options (Bowman and Hurry 1993). Because technologically uncertain markets are likely to offer a greater number and range of threats and opportunities for firms to adapt and improvise, we expect strategic flexibility to be of higher importance in markets characterized by high levels of technological uncertainty than in low–technological uncertainty markets.

In contrast, an economic crisis diminishes the importance of technologically advanced products and increases the importance of demand management. Even a flexible portfolio of options is unlikely to be useful in crisis, because the prime need of that moment is to learn and not just respond in a flexible manner. Therefore, we expect technological uncertainty to moderate the positive influence of strategic flexibility on firm performance after crisis.

H_8: The greater the technological uncertainty, the weaker will be the positive relationship between strategic flexibility and firm performance after crisis.

Research Context

Thailand: The Center of the Economic Crisis

The Asian economic collapse began in Thailand in July 1997 with a sudden fall of the Thai baht, which could no longer be pegged to a basket of major currencies. The government spent all its reserves to try to keep the baht close to the pegged rate, but without success. In a few months, the baht devalued from approximately 25 baht per U.S. dollar to more than 50 baht. Quickly, the crisis spread to other Asian and then Latin American countries and has had lingering global effects. Therefore, we believe that Thailand is an appropriate context in which to study this crisis. Our data collection exercise was carried out from November 1998 to March 1999, which coincides with signals related to the bottom of the crisis and the recovery of the Thai economy. Since then, the baht has revalued to a floating rate of approximately 35 baht per U.S. dollar, and the short-term interest rates (20%–25% at the height of the crisis) began to decline to approximately 12% in June 1999. Economists have declared Thailand and Korea as frontrunners in managing their way out of the crisis (Aghevli 1999).

Generalizability of Context

We argue that Thailand provides an appropriate context for testing the generalizability of our research on market orientation and strategic flexibility. It is a non-Western nation with a clearly different set of cultural values in comparison with the United States and Western European countries, where most of the research on market orientation and strategic flexibility has been carried out (Hofstede 1980; McGill 1995). Thai managers and business owners are representative of a non-U.S. sample for Asia, because many are Chinese in origin and thereby similar to their counterparts in other Southeast Asian countries (Powpaka 1998). Thailand has also been the regional headquarters of many multinational companies in Southeast Asia, and Thai managers have been employed to run subsidiaries throughout the region.

We further established the generalizability of the Asian crisis and its impact on Thailand in two ways. First, we compared the influence of the Asian economic crisis on Thailand, South Korea, and Japan. Thailand saw a drop in GDP growth from 5.5% to –10%, whereas the drop was not so adverse for South Korea (from 5.8% to –6.8%) and Japan (from 2.9% to –5.2%). The three countries also witnessed negative growth rates, as pointed out in our definition of an economic crisis. The crisis resulted in rising consumer inflation and unemployment, along with currency devaluation in the three countries. The current account deficits also dramatically declined, which signals a substitution of foreign goods for those produced within the country. Second, we compared the influence of the Asian crisis with those for Mexico and Russia. In terms of real GDP growth, consumer price inflation, unemployment rates, and changes in currency exchange rates, the influence of the Asian crisis on Thailand was similar to economic crises in Mexico (1994) and Russia (1997).

Control Variables

We must control for both the historic levels of firm performance and international dependencies that may influence performance after crisis. Aptly described as the "tenacious past" by Kuran (1988) and "path dependence" by Arthur, Ermoliev, and Kaniovski (1987), higher performance before crisis generally should be manifested in higher performance after crisis. Furthermore, we viewed international dependencies in terms of linkages with suppliers outside Thailand, the extent to which the product/service is exported, and dependence on international financial agencies. Reliance on suppliers from countries not affected by the Asian crisis is likely to have an adverse influence on performance after crisis, because raw materials and other products used in manufacturing become more costly. Demand dependence captures the extent to which a firm relies on international demand. An economic crisis usually results in currency devaluation that makes exported products cheaper. Demand dependence should therefore enhance performance after crisis. Finally, we controlled for financial dependence, which indicates the extent of reliance on borrowing in foreign currencies. The higher the reliance on international financial institutions, the more severe should be the adverse effects of a crisis.

Method

Sample and Data Collection Procedure

We focused on small and midsized Thai firms, which were relatively more vulnerable to the crisis because organizational slack (buffer) directly varies with firm size (see Clark, Varadarajan, and Pride 1994). Data were collected from these firms in three waves. First, consistent with recent research on Thai firms (Powpaka 1998), the data were collected during November 1998 from 49 middle managers and owners participating in an executive MBA program at a large university in northeastern Thailand. A subsequent group of respondents who participated in the program in March 1999 provided the second set of 61 responses. Third, during March 1999, a senior manager in a prominent Thai conglomerate in Bangkok agreed to the conglomerate's participation in the study. We distributed the survey to the 30 firms affiliated with the conglomerate and obtained 22 responses. Thus, we received 132 responses, of which 120 were complete and usable. Furthermore, we compared the three groups in terms of the number of employees before crisis (BEMP) and number of employees after crisis (AEMP) and found no differences. We also compared the change in the number of employees (CEMP = BEMP – AEMP) for the three groups and found that the mean number of employees increased for the three groups and that there were no statistical differences in the change in these means. Finally, we translated the questionnaire from the original English version to Thai and used the back-translation technique to ensure that the original meaning was maintained.

Measures

We operationalized market orientation with four subconstructs: information generation, information dissemination, response design, and response implementation. Specifically, we adopted Jaworski and Kohli's (1993) 31-item measure with 10 items for information generation and 7 items for each of the remaining three subconstructs. We carried out a measure purification exercise similar to that used by Kohli, Jaworski, and Kumar (1993, p. 475), who note that "As globalization issues assume the forefront of marketing practice, it is important to consider whether (1) the scale 'makes sense' in other languages and (2) subsequent measure assessment would produce similar results." However, after the development of this market orientation measure, advances in psychometric research on instrument development provided evidence of two potential issues with this measure. First, Bagozzi and Baumgartner (1994) recommend using 5 or fewer items to measure a unidimensional construct. Because all the subconstructs of market orientation have more than 5 items, it is possible that assessing the unidimensionality of these constructs will pose problems. Second, Herche and Engelland (1996) demonstrate that reverse-scored items need not be the opposite of positively worded items and therefore should be avoided. In the 31-item measure of market orientation, 10 items are reverse-scored. Therefore, cognizant that the market orientation measure may pose challenges, we sought to assess the psychometric properties of this measure as a peripheral objective in the Thai context.

We used four items to measure strategic flexibility. The first item captures the organizational objective of building excess resources by hedging (Eppink 1978) and likewise stresses sharing investments across business activities. Such investment sharing buffers an organization from external shocks, because the organization can find alternative uses for its resources. The next two items gauge organizational attempts to build agility and versatility by instilling capabilities to respond to disparate situations. Specifically, the second item appraises a firm's emphasis on deriving benefits from diversity in the environment, and the third item measures the importance the firm puts on benefiting from opportunities that arise from variability in the environment. These emphases on actively managing the diversity and variability help organizations become agile and versatile (Jones and Ostroy 1984). The final item appraises strategic flexibility in terms of a firm's strategic emphasis on managing macroenvironmental risk (i.e., political, economic, and financial risks). Firms placing such an emphasis attempt to gain a competitive edge by developing superior abilities in responding to environmental uncertainties. In operational terms, these firms may possess liquid resources or options to enhance the speed and extent of their maneuvering capabilities.

To measure the three components of the environment (i.e., competitive intensity, demand uncertainty, and technological uncertainty), we adopted items from Jaworski and Kohli's (1993) work. The four items for competitive intensity assessed the extent of competition in general, promotional wars, price competition, and new competitive moves. The four items for demand uncertainty measured the uncertainty created by variability in consumer demand, product and brand features, price/quality demanded by customers, and competitive moves. The three-item technological uncertainty scale appraised changes in technology, opportunities created by technology, and manifestation of new products as a result of technology.

We measured performance (both before and after crisis) by assessing satisfaction with respect to return-on-investment goals, sales goals, profit goals, and growth goals. We appraised international interdependencies with three three-item measures. The items for international supplier dependence measured relying on international suppliers, buying raw materials and other supporting materials from abroad, and relying on multinational corporations for raw material. The scale for international demand dependence assessed selling products to foreign customers, relying on overseas demand, and being able to satisfy multinational and foreign customers. The measure for international financial dependence appraised financing from abroad, the criticality of funding from abroad, and financing from international monetary agencies.

Measure Validation

We used confirmatory factor analysis to assess the convergent and discriminant validity for our measurement models (Gerbing and Anderson 1988). Specifically, we estimated four measurement models: the first for the three environmental variables (competitive intensity, demand uncertainty, and technological uncertainty), the second for the three control variables (supplier dependence, demand dependence, and financial dependence), the third for the two performance variables (performance before and after crisis) and strategic flexibility, and the fourth for market orientation. We summarize the results from these models in Table 1. Overall, the results demonstrate adequate levels of fit, and all factor loadings are greater than the .4 cutoff (Nunnally and Bernstein 1994). In addition, discriminant validity is established, in that all the ϕs are statistically different from 1 (Anderson and Gerbing 1982).

We also used low factor loadings, high standardized residuals, and high modification indices from our confirmatory factor analysis results to purify our measures. As we suspected, the majority of the problems pertaining to unidimensionality were related to either long scales (Bagozzi and Baumgartner 1994) or reverse-scored items (Herche and Engelland 1996). We encountered problems in the market orientation subconstructs, especially for response design, which had four of seven items reverse-coded. There is a need for a more reliable measure for market orientation. Finally, all reliabilities are greater than .7, with the exception of the response design subconstruct (Nunnally and Bernstein 1994). The descriptive statistics for the constructs, along with their correlations, appear in Table 2.

Results

In Table 3, we summarize the regression results. Typically, multiplying the appropriate independent variables creates indicators for the interaction terms. Because this approach is prone to collinearity (Jaccard, Turrisi, and Wan 1990), we took an instrumental variable approach to capture the interaction effects. Specifically, we ran a regression in which the product of the two variables in question was the dependent measure and the two variables used to obtain the product term were independent variables. We used the residual of this estimation as the instrument for the interaction hypothesis (for statistical details, see Hansen 1982; White 1983). Conceptually, these residuals are orthogonal to the two variables used to obtain them; in terms of hypothesis testing, they explain variance in addition to that explained by the main effects.

For the control variables, our assertions regarding path dependencies and international demand dependence were supported. Firms with high levels of performance before crisis tended to perform better after crisis (b = .319, $p < .01$), and international demand dependence leads to higher levels of performance after crisis as exports become cheaper in the world market (b = .214, $p < .01$). However, international supplier dependence (b = .029, $p < .67$) and international financial dependence (b = –.012, $p < .88$) do not seem to influence firm performance after crisis. Our informal discussions with the respondents reveal a possible explanation for these results. The suppliers for the firms in our sample

TABLE 1
Results from Confirmatory Factor Analysis Models

Measurement Model	Range of Standardized Factor Loadings	NNFI	CFI	SRMR	RMSEA	χ^2 (d.f., *p*-Value)
Environment[a]	.60–.92	.90	.93	.08	.09	81.2 (41, $p < .01$)
Dependence[b]	.68–.98	.94	.96	.06	.11	56.9 (24, $p < .01$)
Performance and strategic flexibility[c]	.41–.94	.95	.96	.04	.07	82.3 (51, $p < .01$)
Market orientation[d]	.43–.80	.81	.84	.10	.09	224.5 (113, $p < .01$)
Market orientation—second order[e]	.62–.85	.91	.97	.04	.14	6.7 (2, $p < .03$)

[a] The reliabilities for the environmental variables were competitive intensity = .92, demand uncertainty = .87, and technological uncertainty = 86.

[b] The reliabilities for the international dependence variables were supply dependence = .95, demand dependence = .91, and financial dependence = .95.

[c] The reliability for strategic flexibility was .77. The reliabilities for the performance variables were performance before crisis = .91 and performance after crisis = .95.

[d] The reliabilities for the facets of market orientation were information generation = .81, information dissemination = .85, response design = .61, and response implementation = .82. During the item-purification exercise, we deleted the following items from Jaworski and Kohli's (1993) scale. Information generation: 4, 7, 8, 9, 10; information dissemination: 6, 7; response design: 1, 3, 5, 7; and response implementation: 2, 6, 7.

[e] Reliability for a second-order factor structure with an average of four subconstructs as items We also calculated it using the method of linear combinations (see Nunnally and Bernstein 1994, pp 266–73). Specifically, we calculated reliability as $\rho = 1 - (\Sigma\sigma_i^2 - \Sigma\sigma_i^2 r_{ii})/\sigma_Y^2$, where σ_i^2 is the variance for subconstruct i, r_{ii} is the reliability of subconstruct i, σ_Y^2 is the variance of the construct (i.e., market orientation in our case), and ρ is the reliability This method gave us the reliability value of .91.

Notes: NNFI = nonnormed fit index, CFI = comparative fit index, SRMR = standardized root mean square error, RMSEA = root mean square error of approximation, and d f. = degrees of freedom.

TABLE 2
Descriptive Statistics

	ISD	IDD	IFD	CI	DU	TU	MO	SF	PBC	PAC
International supplier dependence (ISD)		.37**	.40**	.17	.33**	.23*	.22*	.21*	–.01	.10
International demand dependence (IDD)			.55**	–.05	.13	.10	.21*	.12	.01	.33**
International financial dependence (IFD)				–.01	.14	–.06	.23*	.26**	–.12	.16
Competitive intensity (CI)					.54**	.41**	.33**	.30**	.03	–.07
Demand uncertainty (DU)						.44**	.48**	.41**	.11	.11
Technological uncertainty (TU)							.45**	.41**	.19*	–.04
Market orientation (MO)								.48**	–.07	.11
Strategic flexibility (SF)									–.06	–.06
Performance before crisis (PBC)										.20*
Performance after crisis (PAC)										
Mean	2.74	2.91	2.34	4.15	4.53	4.67	4.93	4.32	3.92	4.82
Standard deviation	1.64	1.96	1.51	1.48	1.30	1.35	0.99	1.11	1.51	1.14

*$p < .05$.
**$p < .01$.

often were from neighboring countries that were equally influenced by the crisis. In addition, the financial institutions provided the funds in local currencies, which thereby insulated the firms from the vagaries of international currency fluctuations. Although we had conjectured along these lines for international supplier dependence and international financial dependence, by measuring these variables we controlled for the biases that might have been induced had we not incorporated these variables in our analysis.

Does market orientation help in managing market crisis situations? Our results show that it does only in certain conditions. In general, market orientation has a negative influence on firm performance after crisis (H_1: $b = -.734$, $p < .05$), which is aggravated in conditions of high competitive intensity (H_2: $b = -.230$, $p < .01$). However, market orientation helps firms manage conditions of high demand uncertainty (H_3: $b = .301$, $p < .01$) and high technological uncertainty (H_4: $b = .158$, $p < .10$).

Unlike market orientation, strategic flexibility is useful when firms must navigate their way out of crises (H_5: $b = .603$, $p < .01$) and becomes even more important as competitive intensity increases (H_6: $b = .186$, $p < .05$). However, demand uncertainty (H_7: $b = -.362$, $p < .01$) and technological uncertainty (H_8: $b = -.140$, $p < .05$) moderate the positive influence of strategic flexibility on firm performance after crisis.

We estimated a model with performance before crisis as a dependent measure and market orientation, strategic flexibility, and their interactions with the facets of the environment as independent measures. We recognize that such a model is not theoretically sound, because we are trying to explain the 1996 performance with organizational variables measured in 1998. Nonetheless, we found that market orientation positively influences firm performance before crisis and that this effect is moderated by technological uncertainty. In addition, reactive strategic flexibility has an adverse effect on firm performance before crisis, which is moderated by demand uncertainty.

Discussion

Using the Asian economic crisis in Thailand as our research context, we studied the importance of market orientation and strategic flexibility in helping firms manage the chaos and challenges an economic crisis poses. Reasoning that crises "defy interpretations and impose severe demands on sensemaking" (Weick 1988, p. 305), we suggested that learning firms would be locked into set modes of cognition and response because crises are low-probability events and preclude creative sensemaking. The inertia created by market orientation often hampers learning pertaining to the changes in the environment after a crisis, thereby resulting in a negative link between market orientation and firm performance after crisis.

Our results indicate that market orientation is useful for managing crises only in conditions of high demand uncertainty or high technological uncertainty, and it might not be emphasized when competitive intensity is high. When firms have an emphasis on market orientation, they get locked into institutionalized thinking about competitors. However, precrisis assumptions of competitive behavior are no longer valid after a crisis, and as a result market orientation tends to hurt market-oriented firms. Conversely, an emphasis on market orientation enables firms to learn the new demand patterns quickly and effectively, because their primary focus in high–demand uncertainty environments is consumers (Day and Wensley 1988). An economic crisis shifts competition away from innovative new products, which tend to be expensive, and toward other market factors such as demand management. Again, market orientation comes in handy here.

In contrast, the tools and skills developed by posturing strategic flexibility are useful in crisis situations. Our results recommend flexibility in managing environments with high competitive intensity. However, flexibility is not a cure for environments with either high demand uncertainty or high technological uncertainty. Readers are advised to observe that in markets characterized by high competitive intensity, strategic flexibility should be emphasized and market orientation should be deemphasized. In markets with high demand uncertainty or high technological uncertainty, market orientation should be emphasized and strategic flexibility should not be stressed. The complementarity of market orientation and strategic flexibility in managing varying environmental con-

TABLE 3
Results from the Three-Stage Least Squares Model^{a}

Independent Variable	Dependent Measure: Performance After Crisis
Constant	1.195 (1.604)
Performance before crisis	.319*** (.087)
International supplier dependence	.029 (.068)
International demand dependence	.214*** (.060)
International financial dependence	–.012 (.083)
Competitive intensity (CI)	–.211** (.116)
Demand uncertainty (DU)	.561*** (.153)
Technological uncertainty (TU)	–.050 (.138)
Market Orientation (MO)	
MO	–.734** (.356)
MO × CI	–.230*** (.090)
MO × DU	.301*** (.106)
MO × TU	.158* (.101)
Strategic Flexibility (SF)	
SF	.603*** (.220)
SF × CI	.186** (.087)
SF × DU	–.362*** (.094)
SF × TU	–.140** (.083)

$^{*}p < .10$.
$^{**}p < .05$.
$^{***}p < .01$.
^{a}Standard error is in parentheses (one-tail rests). $R^2 = .27$.

ditions suggests that top management should develop both of these capabilities in tandem. This complementarity is further reinforced by the finding that market orientation and strategic flexibility capabilities can be simultaneously pursued, as is indicated by the high correlation of .48 between the two constructs (see Table 2). Firms can simultaneously build these two capabilities and thereby, to an extent, make the resource allocation decision between these two capabilities moot.

Limitations

The main limitation of our research pertains to the nature of our sample. Two of the three sample sources are executive MBAs, which indicates that caution is necessary in drawing inferences. Firms that participate in executive MBA programs are likely to be somewhat different from firms that do not; they are more likely to succumb to the pressures of professionalization (DiMaggio and Powell 1983) and as a result are more likely to adopt the models propagated by business schools, such as the importance of market orientation.

Three more limitations require caution as we draw implications from and generalize our results. First, we are limited by our context, and replications with other economic crises are needed. Second, there is a need to develop a better measure of strategic flexibility that would give a better sampling of the domain of the construct. Third, similar to most survey research, our results suffer from survival bias. Firms that did not survive the crisis are missing from our sample.

Theoretical Contributions and Implications

We believe that our research makes important contributions to the literature on economic crisis, market orientation, and strategic flexibility. By using organization-level data with a large number of respondents, we move beyond the theoretical (see Pearson and Clair 1998) and case-based (Abolafia and Kilduff 1988) research that dominates the crisis literature. We also show that the organizational capability (market orientation or strategic flexibility) that would aid organizations in managing a crisis is contingent on the facets of the environment.

We also contribute to the literature on market orientation. Time and again, scholars have expressed the need to study market orientation in a non-U.S. context (e.g., Kohli, Jaworski, and Kumar 1993). We take an important step in this direction and highlight three issues. First, our research examines the psychometric properties of Kohli, Jaworski, and Kumar's (1993) MARKOR measure, and our results suggest further refinement of this measure. Second, we demonstrate that market orientation influences performance after crisis but find that it is only useful for managing economic crises in environments characterized by high levels of either demand or technological uncertainty. Third, we study the boundary conditions for the influence of market orientation. Several studies have shown that customer orientation can be detrimental (Christensen and Bower 1996). Slater and Narver (1998, 1999) rightly argue that market orientation goes beyond customer orientation and should help overcome the weakness inherent in customer orientation. In the case of economic crises, our research shows that market orientation does not help firms effectively manage all environmental conditions and demonstrates the need to refine the construct further. The emergence of the network economy is increasing the interconnectedness among countries (Achrol and Kotler 1999), and regional economic crises therefore may have riveting effects around the world. It therefore becomes important for organizations to build capabilities to manage crises and for marketing researchers to be attuned to market orientation for crisis situations. We also demonstrate the importance of strategic flexibility in crisis situations, in that strategic flexibility helps firms manage crises in markets characterized by either high levels of competitive intensity or low levels of demand uncertainty and technological uncertainty.

In addition to demonstrating the limitations of a market orientation in crisis situations, our research hints at the manner in which this important construct could be refined. Market orientation primarily reflects a firm's learning about its environment; that is, a firm learns from its environment and learns to manage its environment. However, a firm may face a situation it has never encountered. Crises are obvious examples, but we could also put breakthrough technological advances, such as the emergence of electronic commerce, in this category. If a firm has not been schooled in managing rare situations, it is at odds for its response. The lethargy with which bricks-and-mortar retailers adopted the Internet is an apt example (see Brooker 1999). Our study suggests that a market-oriented firm or a generative learner (see Sinkula 1994) should build a buffer to manage unique, unpredictable challenges reactively. Slater and Narver (1995) discuss buffering but in the context of proactive rather than reactive management. We believe that reactive actions are necessary though not desirable. We recognize that we provide only preliminary evidence for the refinement of market orientation in the direction of incorporating reactive resources, but we have taken an important step in this direction.

Managerial Contributions and Implications

What capabilities do firms build to manage crises? This is an important question that today's practitioners are asking as organizations around the world try to cope with the growing pains of economic prosperity. Our research helps provide a partial answer to this question. Managers should stress building the skills of market orientation and strategic flexibility while recognizing their usefulness in managing different facets of the environment.

Market orientation aids in enhancing performance before crisis and, consistent with the "tenacious past" (Kuran 1988) argument, indirectly enhances performance after crisis (through firm performance before crisis). Market orientation should also be stressed in environments characterized by high demand or technological uncertainty, whereas strategic flexibility should be sought after in markets characterized by high levels of competitive intensity.

Conclusion

Economic crises are complex phenomena from both a theoretical and a practical perspective. Our study is among the few attempts to unravel how organizational capabilities may be used to manage these situations effectively. We touch on only two capabilities, and many questions remain to be answered. We hope our research stimulates interest and motivates more organization-level research on economic crises.

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Arjun Chaudhuri & Morris B. Holbrook

The Chain of Effects from Brand Trust and Brand Affect to Brand Performance: The Role of Brand Loyalty

The authors examine two aspects of brand loyalty, purchase loyalty and attitudinal loyalty, as linking variables in the chain of effects from brand trust and brand affect to brand performance (market share and relative price). The model includes product-level, category-related controls (hedonic value and utilitarian value) and brand-level controls (brand differentiation and share of voice). The authors compile an aggregate data set for 107 brands from three separate surveys of consumers and brand managers. The results indicate that when the product- and brand-level variables are controlled for, brand trust and brand affect combine to determine purchase loyalty and attitudinal loyalty. Purchase loyalty, in turn, leads to greater market share, and attitudinal loyalty leads to a higher relative price for the brand. The authors discuss the managerial implications of these results.

Price premiums and market share have been closely associated with the increasingly salient concept of brand equity (Aaker 1996; Bello and Holbrook 1995; Holbrook 1992; Park and Srinivasan 1994; Winters 1991). These outcomes, which in turn drive brand profitability, depend on various aspects of brand loyalty. Specifically, brand-loyal consumers may be willing to pay more for a brand because they perceive some unique value in the brand that no alternative can provide (Jacoby and Chestnut 1978; Pessemier 1959; Reichheld 1996). This uniqueness may derive from greater trust in the reliability of a brand or from more favorable affect when customers use the brand. Similarly, brand loyalty leads to greater market share when the same brand is repeatedly purchased by loyal consumers, irrespective of situational constraints (Assael 1998). Furthermore, because of various affective factors, loyal consumers may use more of the brand—that is, may like using the brand or identify with its image (Upshaw 1995). In summary, superior brand performance outcomes such as greater market share and a premium price (relative to the leading competitor) may result from greater customer loyalty. This loyalty, in turn, may be determined by trust in the brand and by feelings or affect elicited by the brand.

The importance of brand loyalty has been recognized in the marketing literature for at least three decades (Howard and Sheth 1969, p. 232). In this connection, Aaker (1991) has discussed the role of loyalty in the brand equity process and has specifically noted that brand loyalty leads to certain marketing advantages such as reduced marketing costs, more new customers, and greater trade leverage. In addition, Dick and Basu (1994) suggest other loyalty-related marketing advantages, such as favorable word of mouth and greater resistance among loyal consumers to competitive strategies. Yet despite the clear managerial relevance of brand loyalty, conceptual and empirical gaps remain. Specifically, with some exceptions (Oliver 1999; Zeithaml, Berry, and Parasuraman 1996), our conceptualizations of brand loyalty emphasize only the behavioral dimension of that concept, thereby neglecting its attitudinal components and its relationship with other variables at both the consumer and market levels. Therefore,

> Even though many marketers have emphasized the need to define brand loyalty beyond operational measures (mostly sequence of purchases), the nomology of brand loyalty in behavioral theory (i.e., its relationships with other concepts in the expanding vocabulary of marketing research) requires stronger integration. (Dick and Basu 1994, p. 99)

The present study explores the relationship among brand trust, brand affect, and brand performance outcomes (market share and relative price) with an emphasis on understanding the linking role played by brand loyalty. Toward this end, we further examine the effects of two general product-level, category-related control variables (hedonic and utilitarian value) on brand trust and brand affect and the effect of two brand-level control variables (brand differentiation and share of voice) on market share and relative price. If these relationships exist, measures of brand trust and brand affect can be included (along with existing measures of brand loyalty and brand equity) in our assortment of brand-valuation techniques (Keller 1993). Moreover, marketing managers can justify expenditures on promotions to create such long-

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term consumer effects as brand trust and brand affect. Furthermore, our understanding of the process of brand loyalty and brand performance will benefit from an empirically supported explanation for these crucial marketing concepts.

We use brands—that is, specific branded versions of particular product classes—as the units of analysis in this study. This enables us to bring consumer-level notions of trust and affect toward brands into the same plane as market-level measures of brand performance such as market share and relative price, which are at the level of the brand. We do this by averaging across consumer responses and thus arriving at single brand-specific scores for the notions of brand trust, brand affect, and brand loyalty. We then merge these scores with data on market share and relative price to create a single data set at the level of brands as the units of analysis. We do not mean to suggest in any way that brands themselves are capable of affect or trust, but rather that brands have the response potential to elicit affect and trust from consumers. The brand scores thus represent the average response potential of the brand in terms of the trust, affect, or loyalty that it is capable of eliciting from consumers. These brand scores also include data on the product-category characteristics of the brand. As explained in the "Methods" section, these product-level, category-related scores control for the effect of the product category on the theoretical relationships of interest. This helps us extricate the relationships that are at the level of the brand alone.

In what follows, we begin by defining the constructs of interest and developing a model of the relationships among these constructs. To develop our hypotheses, we draw from the new and emerging concepts of relationship marketing, brand equity, and double jeopardy. Here, we propose that instead of representing separate, competing, or antithetical orientations, these conceptualizations can be reconciled and integrated as crucial aspects in an overall process of brand development and brand performance. In this direction, we present the methods, measures, and results of three surveys designed to test the hypotheses of interest. We discuss the results in terms of their managerial relevance and implications for further research.

Model

Background

Oliver (1999, p. 34) defines brand loyalty as

> a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, *despite* situational influences and marketing efforts having the potential to cause switching behavior.

This definition emphasizes the two different aspects of brand loyalty that have been described in previous work on the concept—behavioral and attitudinal (Aaker 1991; Assael 1998; Day 1969; Jacoby and Chestnut 1978; Jacoby and Kyner 1973; Oliver 1999; Tucker 1964). Behavioral, or purchase, loyalty consists of repeated purchases of the brand, whereas attitudinal brand loyalty includes a degree of dispositional commitment in terms of some unique value associated with the brand. We propose in Figure 1 that brands high in consumer trust and affect are linked through both attitudinal and purchase loyalty (also among consumers) to greater market share and premium prices in the marketplace.[1]

Consider, for example, a diner who patronizes only one restaurant. One explanation for this behavior could involve a lack of knowledge of other restaurants and thus habituation to a single place of patronage. Another possible explanation is that the consumer has visited other restaurants; has found that restaurants differ in quality, convenience, service, and so forth; has discovered a particular restaurant that can be trusted and relied on in terms of these criteria; and now chooses to frequent this restaurant rather than other, less trustworthy places. Another scenario is that the customer might have developed strong emotional ties with the restaurant or with its staff. This brand affect leads to greater commitment in the form of attitudinal loyalty and a willingness not only to revisit the restaurant but also to pay a premium price for the pleasure involved. Moreover, the loyal consumer may even increase his or her usual frequency of eating out every week (instead of cooking at home), thus providing the favorite restaurant with increases in sales. The consumer may now also find other uses for the restaurant, such as ordering take-out food when in a hurry, encouraging group visits with friends, asking the staff to cater a party, and so on. All this will generate additional sales and consequent profitable brand outcomes for the restaurant.

In the present study, brand affect is defined as a brand's potential to elicit a positive emotional response in the average consumer as a result of its use. In consonance with the definition of trust provided by Moorman, Zaltman, and Deshpande (1992, p. 315) and Morgan and Hunt (1994, p. 23), we define brand trust as the willingness of the average consumer to rely on the ability of the brand to perform its stated function. Moorman, Zaltman, and Deshpande (1992) and Doney and Cannon (1997) both also stress that the notion of trust is only relevant in situations of uncertainty (e.g., when greater versus lesser differences among brands occur). Specifically, trust reduces the uncertainty in an environment in which consumers feel especially vulnerable because they know they can rely on the trusted brand.

Doney and Cannon (1997, p. 37) suggest that the construct of trust involves a "calculative process" based on the ability of an object or party (e.g., a brand) to continue to meet its obligations and on an estimation of the costs versus rewards of staying in the relationship. At the same time, Doney and Cannon point out that trust involves an inference regarding the benevolence of the firm to act in the best interests of the customer based on shared goals and values. Thus, beliefs about reliability, safety, and honesty are all important facets of trust that people incorporate in their operationalization of trust, as we discuss subsequently. Overall, we view brand trust as involving a process that is well thought out and carefully considered, whereas the development of brand affect is more spontaneous, more immediate, and less deliberately reasoned in nature.

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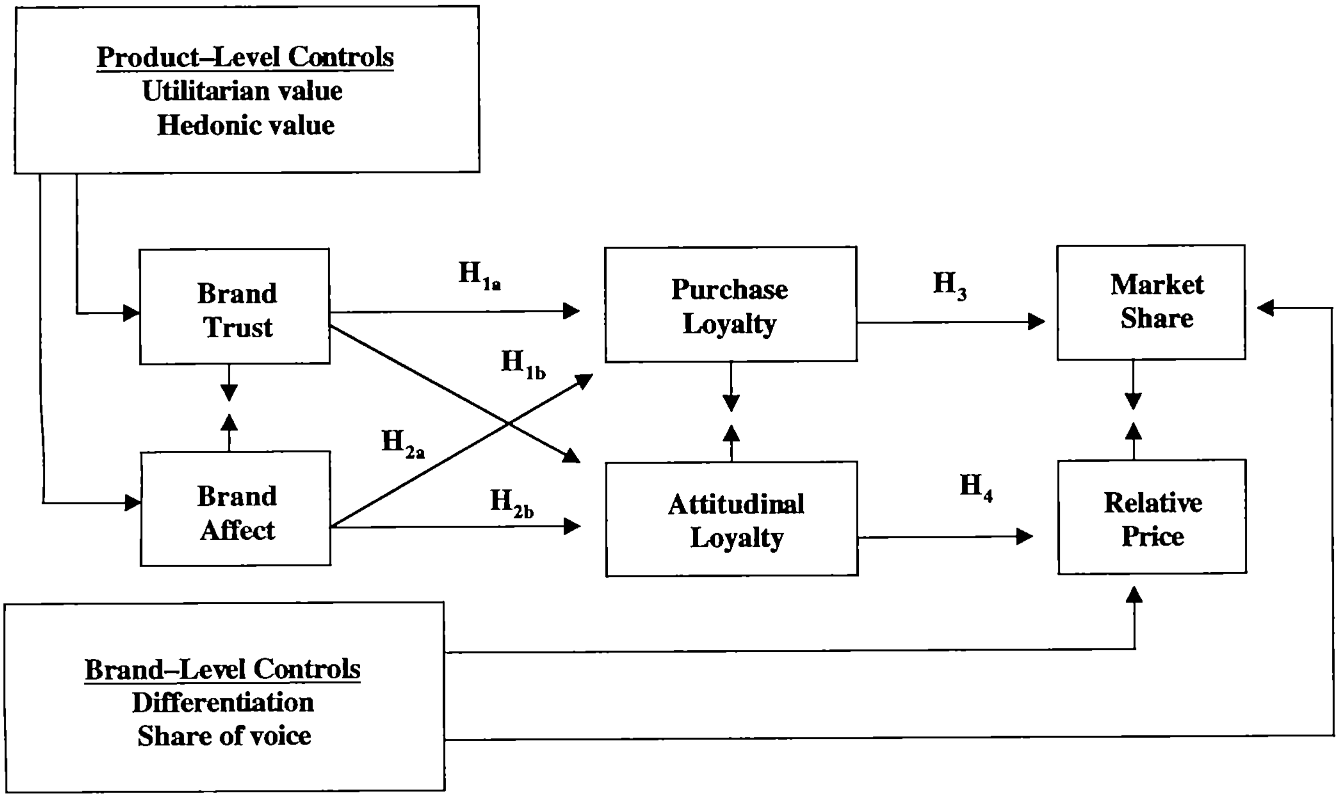
[1] This framework draws on assumptions made at the level of individual consumers, whereas the data in the study are compiled at the level of aggregated responses. This is not uncommon. As Fox, Reddy, and Rao (1997, pp. 253–54) point out, "The conceptual basis for most observed aggregate (macro) phenomena is at the disaggregate, individual (micro) level" See also the other references cited by these authors in defense of this treatment.

FIGURE 1
A Model of Brand Loyalty and Brand Performance



The model in Figure 1 also includes certain product-level, category-related control variables (hedonic and utilitarian value) and certain brand-level control variables that are discussed fully in a later section (see "Control Variables"). Researchers have suggested that the product-category characteristics will influence brand-level effects (such as brand trust, brand affect, brand loyalty, or brand performance). Categorization and schema theory (Lurigio and Carroll 1985; Sujan 1985) appears to bear this out. These theories both suggest that product-category cognitions are likely to precede thoughts and feelings about brands within the product category. According to categorization theory (Sujan 1985), people form categories of the stimuli around them, and new stimuli (e.g., brands) are understood according to how they fit into these existing categories. Thus, prior knowledge of the product category determines the type of evaluation that a brand stimulus will evoke. Similarly, schema theory (Lurigio and Carroll 1985) suggests that people form abstract schemata from prior knowledge and experience and then use these schemata (say, product categories) to evaluate new information (say, on brands). Hedonic and utilitarian values can thus be conceived of as abstractly representing two types of knowledge gathered from prior experience with the product category for use in evaluating individual brands within that product category.

Hypotheses

As mentioned previously, it has been suggested that brand loyalty includes some degree of predispositional commitment toward a brand (Aaker 1991; Assael 1998; Beatty and Kahle 1988; Jacoby and Chestnut 1978). Therefore, our notion of brand loyalty in this study includes both purchase loyalty and attitudinal loyalty (Figure 1). Purchase loyalty is defined as the willingness of the average consumer to repurchase the brand. Attitudinal loyalty is the level of commitment of the average consumer toward the brand.

We propose that brand trust and brand affect are each related to both purchase and attitudinal loyalty. This proposition stems from the emerging theory of brand commitment (similar to brand loyalty) in relationship marketing (Fournier 1998; Gundlach, Achrol, and Mentzer 1995; Moorman, Zaltman, and Deshpande 1992; Morgan and Hunt 1994; Webster 1992). Brand trust and brand affect appear to serve as key determinants of brand loyalty or brand commitment, consistent with the concept of one-to-one marketing relationships.

Brand trust leads to brand loyalty or commitment because trust creates exchange relationships that are highly valued (Morgan and Hunt 1994). Indeed, commitment has been defined as "an enduring desire to maintain a valued relationship" (Moorman, Zaltman, and Deshpande 1992, p. 316). Thus, loyalty or commitment underlies the ongoing process of continuing and maintaining a valued and important relationship that has been created by trust. In other words, trust and commitment should be associated, because trust is important in relational exchanges and commitment is also reserved for such valued relationships. In this connection, Moorman, Zaltman, and Deshpande (1992) and Morgan and Hunt (1994) find that trust leads to commitment in business-to-business relational exchanges. Thus, we suggest that brand trust will contribute to both purchase loyalty and attitudinal loyalty. Trusted brands should be purchased more often and should evoke a higher degree of attitudinal commitment.

H_1: Brand trust is positively related to both (a) purchase loyalty and (b) attitudinal loyalty.

In the context of maintaining brand relationships, the emotional determinants of brand loyalty or commitment need to be considered separately. Gundlach, Achrol, and Mentzer (1995) suggest that commitment is associated with positive affect and that though this may prevent the exploration of other alternatives in the short run, steady customer benefits are likely to accrue from such affective bonding in the long run. In particular, these authors view such a relationship or "affective attachment" (p. 79) to be most beneficial in uncertain environments. Our expectation of a positive relationship between brand affect and brand commitment or loyalty is further predicated on the ties between positive emotional feelings and close interpersonal relationships (Berscheid 1983). In this connection, Berscheid (1983) isolates two critical aspects of a close emotional relationship—namely, the magnitude of the affect (intensity) and its hedonic sign (positive/negative). We suggest that the close relationship of a brand with its consumers (i.e., commitment) also tends to reflect the level of positive affect generated by that brand. Strong and positive affective responses will be associated with high levels of brand commitment. Similarly, Dick and Basu (1994) have proposed that brand loyalty should be greater under conditions of more positive emotional mood or affect. Thus, brands that make consumers "happy" or "joyful" or "affectionate" should prompt greater purchase and attitudinal loyalty. People may not always purchase the brands they "love" for reasons of high price and so forth. In general, however, brands that are higher in brand affect should be purchased more often and should encourage greater attitudinal commitment. Therefore,

H_2: Brand affect is positively related to both (a) purchase loyalty and (b) attitudinal loyalty.

Figure 1 further suggests that the variables of purchase loyalty and attitudinal loyalty contribute to brand outcomes such as market share and relative price. Here, as elsewhere, market share is defined as a brand's sales taken as a percentage of sales for all brands in the product category. We expect that brands higher in purchase loyalty will also be higher in market share because of higher levels of repeat purchases by the brand's users. This expectation is predicated on the theory of double jeopardy (McPhee 1963), which has been advanced as one of the few "lawlike" generalizations in marketing (Ehrenberg, Goodhardt, and Barwise 1990, p. 90) and is supported by a considerable body of evidence (see also Donthu 1994; Fader and Schmittlein 1993).

The double-jeopardy theory specifies that brands with smaller market share are at a disadvantage compared with brands with larger market share in two ways: First, they have fewer buyers; second, they are purchased less frequently by these few buyers. In contrast, more popular brands with larger market shares have more buyers and are purchased more often by these buyers. In short, relevant to our present concerns, brands with greater purchasing loyalty should and do exhibit greater market shares, with a correlation of approximately $r = .60$ for frequently purchased products (Ehrenberg, Goodhardt, and Barwise 1990, p. 83). Accordingly, we can expect a positive relationship between a brand's market share and the purchase loyalty of its buyers. The caveat must be made that increasing purchase loyalty results in increased market share only if the size of the targeted segment is large enough and if other segments (e.g., present heavy users of the brand) are not alienated by any changes in marketing strategy. Also, this discussion may be more appropriate for national or international brands than for regional or local brands. These caveats notwithstanding,

H_3: Market share increases as purchase loyalty increases.

Relative price is defined as the price of a brand relative to that of its leading competitor. We use relative price as an aspect of brand performance with the caveat that in evaluating this performance, price should be considered in conjunction with the costs of maintaining the brand (which, in the present case, we assume to be roughly equal among competitors and/or held constant by partialing out share of voice as a control variable, as described subsequently).

Consumers' price perceptions of brands have been found to be unrelated to brand loyalty (Yoo, Donthu, and Lee 2000). However, when actual rather than perceived relative price measures are used, we propose that brands higher in attitudinal loyalty will command higher relative prices. This proposition draws on the theory of brand equity, which has been described by the Marketing Science Institute as "the set of associations and behavior on the part of a brand's customers, channel members, and parent corporation that permits the brand to earn greater volume or greater margins than it could without the brand name" (Leuthesser 1988, p. 31). Winters (1991) and Aaker (1996) have reviewed different ways of assessing brand equity, and both authors reach the conclusion that the price of a brand in the marketplace is a critical aspect of its brand equity. Furthermore, Holbrook (1992; Bello and Holbrook 1995) defines brand equity operationally as the price premium associated with a given brand name across a range of product categories. Moreover, to cite Keller (1993, p. 9), "Consumers with a strong, favorable brand attitude should be more willing to pay premium prices for the brand." In other words, greater attitudinal loyalty should lead to greater willingness to sacrifice by paying a premium price for a valued brand. Therefore, on the basis of the literature, we expect a significant and positive relationship between a brand's attitudinal loyalty and its relative price in the marketplace.

H_4: Relative price increases as attitudinal loyalty increases.

Control Variables

Although they are not of primary theoretical interest to our study, we include in our model control variables that have been found in prior research to affect brand outcomes.

Beyond whatever substantive interest these control variables possess in their own right, their major purpose here is to help remove statistical noise due to omitted-variables bias in a case in which we can capture effects that have been shown elsewhere to make a difference.

Brand-level control variables. Smith and Park (1992) find that the degree of brand differentiation is significantly related to market share. With some exceptions, the brand's share of voice has also tended to account for market share (Jones 1990). Furthermore, brand differentiation may justify a higher relative price. Also, share of voice may reflect differences in advertising expenditures and therefore may also tend to affect relative price. Thus, controlling for these variables statistically by including them with the other independent variables of interest provides for a stronger test of our hypotheses regarding the impact of brand loyalty on the relevant brand performance outcomes (while brand differentiation and share of voice are held constant).

Product-level, category-related control variables. In presenting an alternative to the usual decision-oriented perspective on consumer behavior, Holbrook and Hirschman (1982) advocate research on the experiential aspects of human consumption in which emotions and feelings of enjoyment or pleasure are key outcomes. They also propose two different types of consumption: utilitarian products with tangible or objective features and hedonic products with nontangible or subjective features that produce a pleasurable response from consumers. More recently, other researchers have attempted to measure the hedonic versus utilitarian aspects of consumption (Babin, Darden, and Griffin 1994; Batra and Ahtola 1991; Mano and Oliver 1993; Spangenberg, Voss, and Crowley 1997). Viewed broadly, these two aspects of hedonic and utilitarian value correspond to the archetypal constructs of emotion and reason. In this connection, it has been found that affect and reason meaningfully describe a variety of product categories (Buck et al. 1995). In a similar spirit, we adopt the hedonic and utilitarian value of products as basic and fundamental descriptors of product-category characteristics. We define hedonic value as the pleasure potential of a product class and utilitarian value as the ability to perform functions in the everyday life of a consumer. Note that hedonic value and utilitarian value are not considered in this study to represent two ends of a single continuum. Instead, we view them as two potentially orthogonal types of value, and we suggest that products are best conceived as offering some degree of both.[2]

Hedonic and utilitarian value reflect two contrasting paradigms in consumer behavior theory. Specifically, the information-processing paradigm (e.g., Bettman 1979) regards consumer behavior as largely objective and rational and as oriented toward problem solving. Thus, brand trust (which involves a calculative process, as described previously) toward a particular favored brand may be greater when the utilitarian value in the product category is high in terms of tangible product attributes, such as quality or convenience. In contrast, in the experiential paradigm, consumer behavior pursues the more subjective, emotional, and symbolic aspects of consumption (e.g., Hirschman and Holbrook 1982; Holbrook and Hirschman 1982). More hedonic products have nontangible, symbolic benefits and are likely to encourage a greater potential for positive brand affect. When the emotional elements of pleasure are high and positive for a product category, consumers should experience more favorable affect toward the brand consumed.

Allowing for these kinds of relationships helps control for that part of the trusting or affective response to a brand that depends on the product category itself rather than the brand alone. Some of the benefits of a brand may indeed accrue from the product category it belongs to, and accordingly we control for both hedonic and utilitarian aspects of products, which may account for certain tangible and nontangible aspects of brands. This helps ensure that whatever brand-related effects appear in this study are due to the brand and not to its product-category characteristics.

Method

The Unit of Analysis

This study used brands, rather than individuals, as the units of observation. This approach, which aggregates across consumers to produce scores for (in this case) brands or (elsewhere) advertisements (Holbrook and Batra 1987; Olney, Holbrook, and Batra 1991; Smith and Park 1992; Stewart and Furse 1986), avoids the pitfalls of experimental manipulations that examine only two or a few cases across people (thereby giving rise to alternative hypotheses) while carrying greater significance for practitioners (who must consider the effects of their decisions on individual brands).

Independent Measures

The aggregate-level, brand-specific data for the study were compiled from three separate surveys conducted in three phases. Collecting these responses independently for almost every stage in the model ensures that linkages between any two variables are not artifacts of consistency bias due to asking the same respondents to provide both sets of answers in a single questionnaire. The use of three separate samples guards against this kind of consistency bias and thereby provides a more valid test of the key relationships (Holbrook and Batra 1987; Olney, Holbrook, and Batra 1991; Smith and Park 1992).

In Phase 1, the data on utilitarian and hedonic value were collected in the form of product-level data (i.e., ratings of product categories that pertain to the particular brands surveyed later in Phases 2 and 3). Note that no brand-specific data were collected in Phase 1. In Phase 2, measures of brand performance (market share, relative price) were obtained from a survey of product managers. In Phase 3, the data on brand trust, brand affect, and brand loyalty were gathered by a survey of consumers who were users of the brands in the study.

Phases 2 and 3 were completed during a three-month period in the year immediately following Phase 1. The aggregate-level data generated during each phase were then merged to form a single brand-specific data set for the study. Details regarding the procedures and measures used in the three phases are described in the remainder of this section.

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[2] As one of the reviewers of this article points out, the distinction between hedonic and utilitarian value may depend on whether the relevant satisfaction is immediate (utilitarian value) or in the future (hedonic value): Pharmaceuticals, for example, may be considered utilitarian in their initial use but result in relief from pain, which may be viewed as a gratifying and pleasurable end result. Here and elsewhere, a given product category potentially contributes to both types of customer value.

Phase 1

Data collection. A sample of 146 products was randomly selected from the Standard Industrial Classification (SIC) manual (1987). Four-digit SIC codes were selected at random from the manual's index of manufacturing and nonmanufacturing industries. Next, a specific subdivision was randomly selected from within each industry, and its good or service was taken as a unit of observation. Industrial products were not included in the selection, so that commonly known brands for consumer products could be surveyed in the later phases of data collection. As discussed subsequently, the final data set consisted of 107 brands in 41 of these product categories.

A field survey of 30 actual users was conducted for each of the 146 products, requiring an overall sample of 30 × 146 = 4380 respondents (mean age = 32.2 years). Respondents were first asked if they were users of the good or service and, if thus qualified, were then invited to participate. If they agreed, they were shown the survey and asked to complete it. Reasons for nonparticipation were mostly either nonusage of the product or lack of time to complete the survey. Overall, 11,139 total approaches were made in the Northeastern United States, mostly in Massachusetts, Connecticut, New York, and New Jersey. Insofar as possible, surveys were conducted at places where the product was consumed or purchased. Thus, for example, the surveys for hair tonics were conducted at a hairstyling salon, potato chips at a grocery store, electric fans at the appliance section of a department store, and so forth.

The surveys consisted of a self-administered paper-and-pencil questionnaire that contained the scales for the measures relevant to the present study and for some other measures not relevant to this study. The surveys began with an introductory statement that asked respondents to administer their own responses, assured them of confidentiality, and so forth. This was followed by the measures and a request for demographic information. The surveys were distributed and immediately collected by 49 college students enrolled in two sections of an upper-level marketing course at a private university in the Northeastern United States. The students volunteered for the task (in place of completing alternative class assignments) and received course credit on successful collection of 30 consumer interviews for each of three product categories (i.e., 90 completed responses per student). Their work was carefully supervised, and they were well rehearsed in the procedures to be followed in the distribution and collection of the questionnaires.

The individual-level responses of consumers were combined to produce aggregate-level scores by averaging across the 30 respondents in each of the 146 product categories. An aggregate data set for a representative sample of 146 randomly selected products was thus compiled.

Measures of product-level control variables: hedonic and utilitarian value. Hedonic and utilitarian value were each measured on indices composed of two items accompanied by seven-point scales of agreement (1 = disagree, 7 = agree). For hedonic value, the two items were "I love this product" and "I feel good when I use this product." For utilitarian value, the two items were "I rely on this product" and "This product is a necessity for me." Coefficient alphas for the two-item indices were .74 (hedonic) and .95 (utilitarian), respectively.

Phase 2

Data collection. Of the original 146 products in Phase 1, 50 were included in Phase 2 by virtue of (1) having easily identifiable branded alternatives and (2) representing commonly used offerings for which it would be feasible to locate 30 users of a brand in Phase 3. Questionnaires were mailed to product managers of 372 brands in these 50 product categories.[3] Only one manager was used for each brand. Three weeks later, a second mailing was sent out. A personalized cover letter stating the academic purpose of the study and promising absolute confidentiality was enclosed. Follow-up personal telephone calls were made to encourage participants to complete the survey. Through this approach, 160 completed surveys were obtained, for a response rate of 43%, which was judged quite satisfactory, given the sensitivity of the data requested.

Despite this healthy response rate, it was important to rule out nonresponse bias. In this connection, 42 of the original 50 product categories were represented in the returned surveys. The eight products that were not represented included canned soft drinks, shampoos, synthetic sweeteners, ballpoint pens, women's underwear, cigarettes, flashlights, and razor blades. Our best efforts to contact these managers and to persuade them to complete the surveys were not successful. In general, we were told that the information was confidential and not publicly available. The eight product categories appear to group together as frequently purchased and widely distributed consumer goods. Therefore, their absence was likely to be compensated by the large number of similar products that remained in the data set (e.g., bottled iced tea, hair tonic, candy, coffee, hosiery, laundry soap, chewing gum, suntan lotion, cereal, bacon, beer, margarine, ice cream). A full list of product categories in the final data set appears in Table 1. In general, this table reveals a wide representation of brands drawn from a variety of product categories.

Care was also taken that the sample was not biased toward any one viewpoint or opinion. For example, bias could result from managers with poor outcome measures for their brands not responding to the survey. However, examination of sample statistics on brand outcomes shows that the sample contains a substantial representation of brands with both low and high scores.

Finally, the sample was split into early and late respondents (Armstrong and Overton 1977). The two were compared in terms of the key brand performance outcomes, market share and relative price. This comparison showed no difference in means or variances between the early and late

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[3] These brands were derived from an extensive search through both secondary information sources and personal observation at points of purchase for each of the 50 relevant product categories. Examination of the data provided by the product managers in the final data set reveals that 79% of the brands were nationally distributed in 50 states The remainder of the brands were regionally or locally distributed brands. No dealer brands were used in the study.

TABLE 1
Products in the Study

Personal computers (3)
Women's handbags (3)
Chewing gum (3)
Mattresses (3)
Analgesics (3)
Cameras (3)
Ice cream (3)
Cottage cheese (1)
Suntan lotion (3)
Children's wear (3)
Cereal (3)
Microwave ovens (3)
Perfume (3)
Bacon (3)
Barbecue grills (3)
Gasoline (3)
Canned fruit (3)
Beer (3)
Trucks (3)
Hosiery (3)
Light bulbs (3)
Macaroni (3)
Hotels (3)
Men's underwear (1)
Potato chips (1)
Hair tonic (1)
Margarine (2)
Electric fans (3)
Salad dressing (1)
Microbrews (3)
Laundry soap (3)
Room air conditioners (2)
Vegetable cooking oil (2)
Golf clubs (3)
Kitchen utensils (3)
Boys/men's slacks (1)
Bottled iced tea (3)
Cooking ranges (3)
Candy (3)
Coffee (3)
Automotive tires (2)

Notes: Numbers in parentheses indicate the number of brands for each product category in the final data set of 107 brands.

respondents, which further suggests that nonresponse bias in Phase 2 is unlikely to distort the findings of the present study.

Measures: market share, relative price, and brand-level control variables. All measures in Phase 2 were obtained from the questionnaire responses provided by the product managers. Specifically, these product managers were asked to define the served market of their brand and answer a series of questions on this brand while keeping its served market in mind. For example, market share was measured by asking respondents directly for the brand's market share within its served market. Relative price was constructed as the ratio of retail price per unit of the brand (numerator) to the retail price of the brand's leading competitor (denominator). The leading competitor was defined as the market share leader in the product category. If the brand itself was the market leader, the next strongest brand was taken as the leading competitor. It was deemed preferable to obtain market share and relative price information directly from the brand managers rather than to try to obtain these data through published secondary sources (e.g., *Market Share Reporter*). Such secondary sources do not report all the brands of interest to the study and report market shares from different years and different markets. Thus, obtaining reliable secondary data on these variables (especially relative price) proved to be impossible.

Furthermore, data on brand-level control variables were also collected from the brand managers. Share of voice was estimated as the ratio of a brand's annual advertising expenditures to those for the entire industry (all brands). Brand differentiation was operationalized as the sum of two questions, which asked the managers to give five-point ratings of (1) how different their brand was from all other brands in its category in terms of actual product attributes, defined as "those features of the brand which can be physically identified by touch, smell, sight, taste, etc.," and (2) how different their brand was in terms of overall perceived quality, defined to include nontangible, psychological perceptions that consumers have about the brand in addition to its physical attributes. Coefficient alpha for these items was .75.

Phase 3

Data collection. Interviews to collect data on brand trust, brand affect, and brand loyalty were conducted by 50 students enrolled in a senior-level market research course at a private university in the Northeastern United States. Interviewers volunteered for the task (again, in place of alternative class assignments) and received course credit on successful completion of 30 consumer interviews for each of three brands in a single product category. One interviewer was assigned to each of the 50 product categories. Interviewers were trained on data collection using a mall-intercept technique. Their work was carefully supervised and checked for accuracy by random callbacks (to telephone numbers obtained in the interviews).

Overall, 47 interviewers collected data from 30 different respondents for each of three brands, and two interviewers obtained data for four brands (one interviewer was omitted because of errors), which resulted in a total of 149 brands in 49 product categories represented by 149 × 30 = 4470 respondents (mean age = 35.8 years). To obtain this sample, interviewers made a total of 13,386 approaches in Connecticut, Massachusetts, New Jersey, and New York. They conducted surveys mostly in shopping centers and malls. For some products, such as barbecue grills, this approach was not viable for producing actual users of the product. In these instances, interviewers found users in places where the product was purchased or consumed. For example, the barbecue grill interviewer went to a hardware store to obtain the requisite number of users per brand. Interviews were conducted around the middle of the semester and mostly during the midsemester break.

After qualification for product usage and willingness to participate, respondents were asked which brands of the product they used. They were then interviewed with reference to the first target brand mentioned. If respondents did not use any of the targeted brands from Phase 2, their responses were taken for the brand they did use, but these responses were not included in the final data set, as is discussed subsequently. In this manner, a field survey of 30 actual users was conducted for each of 149 brands in 49 product categories. The means across the 30 responses were calculated for each item on the survey, which resulted in a data set with 149 brands as the units of observation.

Measures: brand trust, brand affect, and brand loyalty. Brand trust was measured as a four-item index based on seven-point ratings of agreement (1 = very strongly disagree, 7 = very strongly agree) with the following four statements: "I trust this brand," "I rely on this brand," "This is an honest brand," and "This brand is safe." Coefficient alpha for this four-item index of brand trust was .81. Brand affect was measured by the sum of three similarly rated items: "I feel good when I use this brand," "This brand makes me happy," and "This brand gives me pleasure." Coefficient alpha for brand affect was .96. In general, brand loyalty was measured by agreement with four statements constructed to reflect either the purchase-related or attitudinal aspects of brand commitment (Jacoby and Chestnut 1978). Specifically, purchase loyalty was measured by agreement with the following two statements: "I will buy this brand the next time I buy [product name]" and "I intend to keep purchasing this brand." Coefficient alpha for purchase loyalty was .90. Attitudinal loyalty was measured by two statements: "I am committed to this brand" and "I would be willing to pay a higher price for this brand over other brands." Coefficient alpha for attitudinal loyalty was .83.

Note that at least one of the measures for brand trust and brand affect corresponds closely to the measures cited previously for utilitarian and hedonic value. This correspondence was introduced intentionally to control for the variance due to the product category when effects due to the brand alone are examined. Thus, for example, we capture the variance due to affect toward the product category with the hedonic value item cited previously ("I feel good when I use this product"), and we separately estimate the variance due to affect toward the brand with the brand affect item ("I feel good when I use this brand"). As stated previously, the product-level, category-related variables of hedonic and utilitarian value act as control variables in the sense that they capture product-category effects that might otherwise be subsumed in the brand-level data. By relating the product-category variables to the brand-level variables of trust and affect, we can isolate the variance that is due to the brand alone from the variance that is due to the product category.

As a test of discriminant validity, Fornell and Larcker (1981) have suggested that the average variance extracted for each construct should be higher than the squared correlation between that construct and any other construct. To demonstrate this for the four constructs just described, we conducted a confirmatory factor analysis with LISREL 8.14 (Jöreskog and Sörbom 1996) using the aggregated data for the 149 brands in Phase 3. Fornell and Larcker's (1981) test of discriminant validity held for all four constructs considered separately; specifically, the largest squared correlation between any two of the constructs was .46, whereas the average variance extracted ranged from .67 to .88. Accordingly, we then summed the relevant items to form multi-item indices of brand trust, brand affect, purchase loyalty, and attitudinal loyalty.

Final Data Set

To construct the final data set, we merged the aggregated consumer-survey data set (Phase 3) based on the means of 30 responses for each of 149 brands with the data set from the managerial survey (Phase 2) for the corresponding brands in the 41 product categories covered by both sets of responses. Next, we entered the appropriate product-category data (Phase 1) on hedonic and utilitarian value for each brand in the data set. This resulted in a combined data set for 107 brands with complete observations on all variables except, in a few cases, one or more of the final brand performance outcomes. These brand performance variables were not always provided by the product managers. In Table 1, we provide a list of the 41 product categories in the final data set of 107 brands (with the number of brands in each category shown parenthetically). Confidentiality agreements with the product managers prevent us from divulging the specific brand names in the final data set.

In Table 2, we provide the full set of correlations among the constructs of interest in the study. Note that the two brand performance outcomes, market share and relative price, were essentially independent (r = .03, n.s.), with a vanishingly small shared variance ($r^2 = .0009$).

Results

Path analysis (LISREL 8.14) was used for testing the model and hypotheses shown in Figure 1. In this path analysis, the multiple indicators were summed together for each construct, and the resulting summated score was used to represent that construct in the simultaneous equation model.[4] Path analysis (LISREL 8.14) testing the proposed model (Figure 1) resulted in the following fit statistics: $\chi^2(18) = 20.32$, $p = .32$, root mean residual (RMR) = .036, goodness-of-fit index (GFI) = .96, adjusted goodness-of-fit index (AGFI) = .89, normed fit index (NFI) = .94, nonnormed fit index (NNFI) = .96, comparative fit index (CFI) = .99, incremental fit index (IFI) = .99. Fourteen structural paths and 13 correlations were estimated for the model containing the ten constructs in Figure 1.

Three of the paths in the proposed model (utilitarian → trust, hedonic → trust, and differentiation → market share) were not statistically significant ($p < .05$). These departures

TABLE 2
Correlations Among Constructs

Constructs	1	2	3	4	5	6	7	8	9	10
1. Utilitarian value	1.00									
2. Hedonic value	.07	1.00								
3. Brand trust	.15	.06	1.00							
4. Brand affect	–.24	.30	.66	1.00						
5. Share of voice	–.17	–.07	.04	–.05	1.00					
6. Differentiation	–.13	.11	.04	.07	.06	1.00				
7. Purchase loyalty	.02	–.09	.63	.55	.03	–.03	1.00			
8. Attitude loyalty	–.02	.08	.52	.51	–.03	–.03	.64	1.00		
9. Market share	–.03	–.01	.19	.08	.35	.02	.22	.12	1.00	
10. Relative price	–.03	.14	.17	.05	.33	.31	.12	.22	.03	1.00

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[4] The path-analytic procedure used here is becoming common in studies in which a small sample size restricts the use of the full structural equation model. For a similar use of the technique, see Li and Calantone (1998) and the references cited by these authors in defense of this approach.

from the model refer to relationships involving control variables not represented by H_1 to H_4 (i.e., not of specific theoretical interest in the present study). The statistically nonsignificant χ^2 indicates a good fit of the model with the data, and the other indices of fit further confirm this. Note that the final model explained 16% of the variance in market share and 24% of the variance in relative price, respectively.

Standardized path coefficients for the model appear in Table 3, which shows that the results support all four hypotheses at $p < .05$ or better. As diagrammed in Figure 2, these results also indicate that brand trust and brand affect are both indirectly related to market share and relative price, and the indirect linkage occurs through the constructs of purchase loyalty and attitudinal loyalty. Note also that as expected the two components of loyalty have different outcomes in terms of brand performance. Purchase loyalty explains market share but not relative price, whereas attitudinal loyalty explains relative price but not market share.

TABLE 3
Standardized Path Coefficients

	Hypothesis	Coefficient
Hypothesized Links		
Brand trust → purchase loyalty	H_{1a}	.46
Brand trust → attitudinal loyalty	H_{1b}	.33
Brand affect → purchase loyalty	H_{2a}	.25
Brand affect → attitudinal loyalty	H_{2b}	.30
Purchase loyalty → market share	H_3	.21
Attitudinal loyalty → relative price	H_4	.21
Control Variables		
Utilitarian value → brand affect		–.26
Hedonic value → brand affect		.32
Share of voice → market share		.35
Share of voice → relative price		.32
Differentiation → relative price		.27

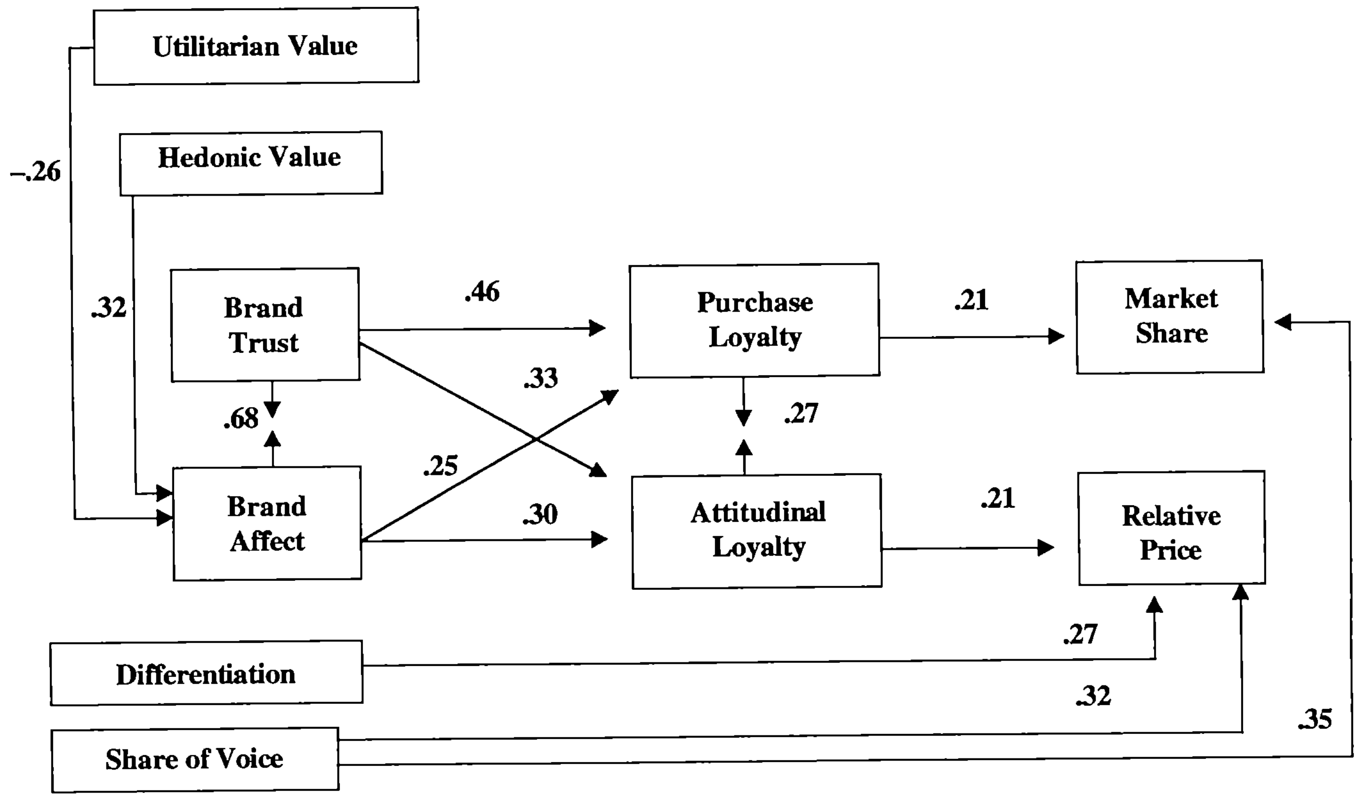
Notes: All coefficients are significant (t-value > 1.96, $p < .05$).

To check for reverse causality, we also tested a nonrecursive model that freed the paths from market share back to purchase loyalty and from relative price back to attitudinal loyalty. Both feedback effects were nonsignificant (t-value < 1.96, $p > .05$).

To determine the robustness of the model to variations among specific groups of products, we ran the same model on durable and nondurable product categories within the final data set. Path analysis (LISREL 8.14) to test the model for durable product categories resulted in the following fit statistics: $\chi^2(18) = 34.34$, RMR = .05, GFI = .94, AGFI = .82, NFI = .92, NNFI = .89, CFI = .96, IFI = .96. With the exception of H_{2a} and H_{2b}, all hypotheses in the study were supported again. Only the paths from brand affect to attitudinal and purchase loyalty were not significant at $p < .05$. However, both paths were positive in direction, as hypothesized. It appears likely that with a larger sample of products, these relationships would become significant.

Path analysis (LISREL 8.14) was also used to test the model for nondurable product categories and resulted in the

FIGURE 2
Significant Paths and Correlations



following fit statistics: $\chi^2(18) = 50.45$, RMR = .06, GFI = .92, AGFI = .75, NFI = .87, NNFI = .76, CFI = .90, IFI = .91. Here, two of the six hypothesized paths (H_{1b} and H_3; brand trust → attitudinal loyalty and purchase loyalty → market share) had standardized coefficients of .15 but were not significant at $p <$ .05. However, both paths again were positive in direction, as hypothesized, and it seems likely that with a larger sample size, these relationships would prove to be significant.

We further tested the robustness of the model by running it separately on utilitarian and hedonic product categories within the final data set. Path analysis (LISREL 8.14) to test the model for utilitarian product categories resulted in the following fit statistics: $\chi^2(18) = 68.69$, RMR = .06, GFI = .90, AGFI = .69, NFI = .84, NNFI = .67, CFI = .87, IFI = .88. All the hypotheses in the study were supported ($p < .05$) in this version of the model.

The fit statistics for hedonic product categories were $\chi^2(18) = 51.94$, RMR = .08, GFI = .92, AGFI = .74, NFI = .86, NNFI = .75, CFI = .90, and IFI = .91. Three of the six hypothesized paths (H_{1a}, H_{1b}, and H_3; brand trust → purchase loyalty, brand trust → attitudinal loyalty, and purchase loyalty → market share) were not significant at $p < .05$. However, all paths were positive in direction, as hypothesized, and would be expected to become significant with larger sample sizes.

In summary, we are confident that the model also applies at the level of more specific product categories, perhaps with a need for some variations in the paths included (to be determined in further research). Such deviations from the norm when testing for segments within the overall "population" of product categories are not uncommon (for a vivid description of the issue, see Wells 1993). However, pending further research, they do not appear to pose a serious threat to the validity of the present findings.

Discussion

Empirical Findings

Almost all conceptualizations of brand equity agree that the phenomenon involves the value added to an offering by consumers' perceptions of and associations with a particular brand name (Aaker 1996; Baldinger 1990; Baldinger and Rubinson 1996; Bello and Holbrook 1995; Dyson, Farr, and Hollis 1996; Holbrook 1992; Keller 1993; Park and Srinivasan 1994; Winters 1991; see also the special issue of the *Journal of Advertising Research* [1997] on brand equity). Therefore, there are two aspects to brand equity—from the viewpoints of the firm and the consumer. The firm-related side of brand equity emphasizes such brand-related outcomes as relative price and market share, whereas customer-based brand equity appears to hinge at its core on psychological associations with the brand (Keller 1993, p. 1). Furthermore, several authors have suggested that these psychological associations with a brand name account for brand equity outcomes such as greater market share or differential consumer responses to marketing-mix variables such as relative price (Aaker 1996; Baldinger and Rubinson 1996; Bello and Holbrook 1995; Keller 1993; Smith and Park 1992). It also has been noted that brands with high market share tend to have high levels of repeat purchase among their users (Ehrenberg, Barnard, and Scriven 1997; Ehrenberg, Goodhardt, and Barwise 1990). However, in this large and growing literature, the role that brand trust and brand affect play in the creation of brand loyalty as a determinant of brand equity outcomes has not been explicitly considered. In the latter connection, our findings suggest that brand trust and brand affect are separate constructs that combine to determine two different types of brand loyalty—purchase loyalty and attitudinal loyalty—which in turn influence such outcome-related aspects of brand equity as market share and relative price, respectively.

This conceptualization has been corroborated by our empirical results, in which very different outcomes were evidenced for brand trust and brand affect as opposed to brand loyalty. Although brand trust and brand affect were each directly related to both purchase and attitudinal loyalty (Table 3), they were indirectly related to market share and relative price. Specifically, brand trust and brand affect contributed to both purchase loyalty and attitudinal loyalty, which in turn contributed significantly to market share and relative price, respectively. From this, it follows that brand loyalty may be viewed as a link in the chain of effects that indirectly connects brand trust and brand affect with the market performance aspects of brand equity.

Brand trust, brand affect, and brand loyalty are also relevant constructs in the relationship marketing literature, which considers trust and commitment or loyalty to be "key mediating variables" in relational exchanges (Morgan and Hunt 1994). As contributors to brand loyalty, brand trust and brand affect have distinct antecedents. In this connection, our results show that different product-category characteristics influence brand trust and brand affect differently. For example, hedonic value in the product category was significantly and positively related to brand affect. Conversely, the utilitarian value of the product category was significantly but negatively related to brand affect. In summary, we find that every level in our model (Figure 1) is necessary to understand fully the chain of effects from the product-level, category-related control variables at one end to the brand performance outcomes at the other.

Although they are not of theoretical interest to the present study, some of the nonhypothesized findings relevant to the purely endogenous variables, market share and relative price, bear repeating. For example, the lack of any correlation between market share and relative price is an interesting finding. Perhaps this relationship is moderated by other variables. Also, it appears from the findings that brand differentiation does not lead to greater market share for the brand but does influence the brand's relative price.

Managerial Implications

One goal of our study was to explore the relationship between the concepts of brand loyalty (purchase loyalty and attitudinal loyalty) and firm-level brand outcomes (market share and relative price) in ways that would tie the roles of brand trust and brand affect to the overall structure of brand equity. If the relevant relationships can be replicated in other studies, measures of these constructs can be included in our assortment of brand valuation techniques (Keller 1993). Accordingly, the results tentatively encourage managers to include measures of brand trust, brand affect, purchase loyalty, and attitudinal loyalty in performing brand valuation analysis. Our study has shown the potential importance of brand loyalty in general and as a link in the determination of brand performance outcomes in particular, while also providing some useful measures of the construct. These measures appear to be reliable and valid predictors of brand performance outcomes. With more work, it should be possible to arrive at even better brand loyalty indices, which can then be combined for use as one among other crucial methods of brand valuation.

Also, marketing managers can interpret these results as helping to justify expenditures on design, communication, and merchandising strategies that create such long-term effects on consumers as brand trust, brand affect, and brand loyalty insofar as these consumer-level constructs contribute to profitable brand performance outcomes. Moreover, as we better relate the consumer and market levels on which brands perform, our overall understanding of the antecedents to brand performance should improve, which will lead to more effective marketing-mix strategies. Brand communication strategies might also be designed with special regard to the product-level, category-related determinants of brand outcomes. For example, understanding that favorable brand affect may be more prevalent in certain product categories—those associated with low utilitarian value and high hedonic value—suggests different advertising themes and strategies for these product categories.

Our study has distinguished among brand trust, brand affect, and brand loyalty while also suggesting that brand loyalty includes components related to both repeat purchase and attitudinal commitment (Jacoby and Kyner 1973). Thus, the results provide managers with evidence for theories of both double jeopardy (through purchase loyalty) and brand equity (through attitudinal loyalty). On the one hand, the evidence suggests that higher brand trust and brand affect, working through higher purchase loyalty to the brand, lead to sales-related brand outcomes such as market share. On the other hand, the evidence also suggests that brand trust and brand affect, working through attitudinal loyalty, lead to premium-related outcomes such as higher relative prices in the marketplace. Most important, there is evidence from this study that brand trust and affect are only indirectly related to market share and relative price through their combined impacts on purchase loyalty and attitudinal loyalty, respectively (Table 3 and Figure 2). Thus, in both cases, the roles of brand loyalty in general and of its attitudinal or purchase-related aspects in particular are critical in understanding the contrasting brand performance outcomes.

Limitations and Further Research

As previously discussed at length, the results of this study are largely in accord with our theoretical expectations. However, as in any study, further research is needed to replicate and extend our findings. In general, these findings should be replicated with different product categories and brands. To assess the generalizability of the model, we have provided fairly consistent results for different product categories. Studies on other product classes, such as luxury goods, services, and impulse purchases, might reveal findings that corroborate or extend our approach. Also, the present study did not examine such personal factors as product involvement, variety seeking, impulsiveness, and so forth. Such individual differences or consumer-based segmentation variables should be incorporated in future studies. Overall, we still need to develop a more detailed understanding of the relationship between brand loyalty and other marketing-related variables.

Furthermore, additional measures of brand trust, brand affect, purchase loyalty, and attitudinal loyalty should be developed, which would lead to a better explanation of brand performance outcomes. Despite the importance of the concept, brand loyalty measurement has not flourished in the marketing literature. For example, there is only one brand loyalty scale included in the 1305 pages of the *Marketing Scales Handbook* (Bruner and Hensel 1992) published by the American Marketing Association, and that lone scale is specific to soft drinks. Scales for both types of brand loyalty (purchase and attitudinal) exist (for some examples, see Jacoby and Chestnut 1978), but they generally are not used in conjunction with one another. Most often, we measure brand loyalty—neglecting its attitudinal component—according to the past purchasing patterns of consumers. The present study has moved toward considering both purchase and attitudinal loyalty, but there is room for further development in that direction and beyond. Similarly, in addition to our measures of market share and relative price, other brand performance outcomes, such as the brand's direct contribution to profits, should be assessed.

Our aggregate-level model using brands as the units of analysis has depicted paths from purchase loyalty to market share and from attitudinal loyalty to relative price. We also checked for possible feedback paths from the brand performance outcomes to the two components of brand loyalty. As mentioned in the "Results" section, we found these feedback effects to be nonsignificant in our data. However, such nonrecursive effects might emerge when people rather than brands are used as the units of analysis. In other words, reverse causality is always a possibility and should continue to be considered in future studies that use different methodological designs. For example, we have suggested that brand trust and brand affect are key determinants of brand loyalty, but this does not preclude the possibility that continuous brand loyalty in turn may also create additional brand trust and brand affect. Indeed, it is likely that studies over time will find that these relationships are ongoing and reciprocal.

Finally and perhaps foremost, we recognize that other determinants of brand loyalty and performance outcomes might supplement the variables included here. In the present study, 16% of the variance in market share and 24% of the variance in relative price were accounted for. This leaves room for potential improvements in explanatory power achieved by more comprehensive models. As researchers increasingly probe the area of relational exchanges between brands and their consumers (Fournier 1998), other constructs that are prevalent in the literature on interpersonal relationships, such as similarity, attraction, love, familiarity, or power, should be examined for their potential relevance to brand loyalty and brand outcomes (e.g., Ahuvia 1999). Also, topics such as sex differences in the development of these constructs should be explored in studies that use group-level brand scores as the units of analysis. We have shown that brand trust and brand affect may differ according to the type of product, but do men and women also differ in their responses to brands or in their subsequent brand loyalty? Furthermore, additional aspects of brand affect abound with research potential. For example, now that the role of emotions has been energetically researched in advertising studies related to marketing and consumer behavior, there remains a need to examine emotional experiences that arise from other product- and brand-related aspects of consumption (Holbrook 1995, p. 14; Mano and Oliver 1993).

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Marketing Literature Review

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This section is based on a selection of article abstracts from a comprehensive business literature database. Marketing-related abstracts from more than 125 journals (both academic and trade) are reviewed by JM staff. Descriptors for each entry are assigned by JM staff. Each issue of this section represents three months of entries into the database.

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1. THE MARKETING ENVIRONMENT

1.1 Consumer Behavior

See also 42, 62, 63, 81, 100, 107, 108, 109, 113, 114, 123, 136, 137, 139, 150, 155, 160, 181, 182, 196, 197, 198, 199, 200, 207, 209, 211, 229

Food for Thought. Roberta Bernstein, *American Demographics*, 22 (May 2000), pp. 39–40, 42. [Hispanic and Asian consumers, Market potentials, Disposable income, Expenditures, Cultural and language issues, Consumer panels, Shopping behavior, Packaged-goods industry.] 1

Congestion Ahead. John Fetto, *American Demographics*, 22 (June 2000), pp. 49–50. [Extreme commuting, Regions, Time spent in traffic, In-auto activities, Billboards, Radio promotions, Creative, Examples.] 2

Make Room for Daddy. Rebecca Gardyn, *American Demographics*, 22 (June 2000), pp. 34–36. [Trends, Fathers, Market potentials, Magazine readership, Household spending decisions, Time spent with children, E-marketing, Statistical data.] 3

The Joy of Empty Nesting. Joan Raymond, *American Demographics*, 22 (May 2000), pp. 48–52, 54. [Trends, Baby boomers, Discretionary income, Lifestyles, Affluence, Market strategy, Quality of life, Techno-savvy, Health concerns, Examples.] 4

Life's a Beach 101. Nancy Shepherdson, *American Demographics*, 22 (May 2000), pp. 56–58, 60, 62, 64. [Echo boomers, E-commerce, Customization, Market strategy, Web sites, Surveys, Recent college grads, Brand loyalty, Jobs, Starting salaries, Investing, Examples.] 5

The Facilitating Influence of Consumer Knowledge on the Effectiveness of Daily Value Reference Information. Fuan Li, Paul W. Miniard, and Michael J. Barone, *Journal of the Academy of Marketing Science*, 28 (Summer 2000), pp. 425–36. [Literature review, Hypothesis, Experiment, Measures, Trial intention, Attitude, Healthiness (overall, fat, fiber, sodium), Statistical analysis.] 6

Effects of Absurdity in Advertising: The Moderating Role of Product Category Attitude and the Mediating Role of Cognitive Responses. Leopoldo Arias-Bolzmann, Goutam Chakraborty, and John C. Mowen, *Journal of Advertising*, 29 (Spring 2000), pp. 35–49. [Literature review; Hypotheses; Experiment; Measures, Ad, brand, and product attitudes; Comparisons; Nonabsurd ads; Recall; Statistical analysis; Implications.] 7

An Empirical Test of an Updated Relevance–Accessibility Model of Advertising Effectiveness. William E. Baker and Richard J. Lutz, *Journal of Advertising*, 29 (Spring 2000), pp. 1–14. [Literature review, Hypotheses, Experiment, Brand names,

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Choice processes (optimizing, satisficing, indifference), Types of information (evidence of performance superiority, credibility, and liking), Statistical analysis, Implications.] 8

Customer Satisfaction Cues to Support Market Segmentation and Explain Switching Behavior. Antreas D. Athanassopoulos, *Journal of Business Research*, 47 (March 2000), pp. 191–207. [Literature review, Model presentation, Hypotheses, Survey of banks' business and individual customers, Measures, Corporate, Innovativeness, Physical and staff service, Pricing, Convenience, Statistical analysis, Implications.] 9

Representation of Numerical and Verbal Product Information in Consumer Memory. Terry L. Childers and Madhubalan Viswanathan, *Journal of Business Research*, 47 (February 2000), pp. 109–20. [Literature review, Conceptual framework based on surface versus meaning level processing of information, Hypotheses, Two experiments, Recognition paradigm, Assessment.] 10

Consumers' Use of Persuasion Knowledge: The Effects of Accessibility and Cognitive Capacity on Perceptions of an Influence Agent. Margaret C. Campbell and Amna Kirmani, *Journal of Consumer Research*, 27 (June 2000), pp. 69–83. [Literature review; Model presentation; Four experiments; When an ulterior persuasion motive is highly accessible, both cognitively busy targets and unbusy observers use persuasion knowledge to evaluate a salesperson; Statistical analysis.] 11

Indexicality and the Verification Function of Irreplaceable Possessions: A Semiotic Analysis. Kent Grayson and David Shulman, *Journal of Consumer Research*, 27 (June 2000), pp. 17–30. [Literature review, Hypotheses, Two studies, Late-adolescent and late-middle-age consumers view irreplaceable possessions as being distinct because of indexicality, Link between verification and irreplaceable possessions, Statistical analysis.] 12

Determinants of Country-of-Origin Evaluations. Zeynep Gurhan-Canli and Durairaj Maheswaran, *Journal of Consumer Research*, 27 (June 2000), pp. 96–108. [Literature review, Hypotheses, Two experiments, Variables, Evaluations, Beliefs, Information relevance, Total thoughts, Country-of-origin and attribute-related thoughts, Statistical analysis.] 13

Standing on the Shoulders of Ancients: Consumer Research, Persuasion, and Figurative Language. William J. McGuire, *Journal of Consumer Research*, 27 (June 2000), pp. 109–14. [Literature review, Early communication (tropes, rhetorical figures), Impacts, Creative hypothesis-generating phase of research, Assessment.] 14

Children, Advertising, and Product Experiences: A Multimethod Inquiry. Elizabeth S. Moore and Richard J. Lutz, *Journal of Consumer Research*, 27 (June 2000), pp. 31–48. [Literature review; Model presentation; Hypotheses, Experiment and depth interviews; Both product trial and advertising have influences, but interplay of these influences differs between older and younger children; Statistical analysis.] 15

Consumer Learning and Brand Equity. Stijn M.J. van Osselaer and Joseph W. Alba, *Journal of Consumer Research*, 27 (June 2000), pp. 1–16. [Literature review, Series of experiments, Strong blocking effects were found despite a limited number of brand preexposures and extensive exposure to predictive attribute information.] 16

The Role of Explanations and Need for Uniqueness in Consumer Decision Making: Unconventional Choices Based on Reasons. Itamar Simonson and Stephen M. Nowlis, *Journal of Consumer Research*, 27 (June 2000), pp. 49–68. [Literature review, Hypotheses, Series of studies, Explaining decisions shifts the focus from the choice of options to the choice of reasons. Buyers who explain their decisions and have high need for uniqueness tend to select unconventional reasons and are more likely to make unconventional choices.] 17

Qualitative Steps Toward an Expanded Model of Anxiety in Gift-Giving. David B. Wooten, *Journal of Consumer Research*, 27 (June 2000), pp. 84–95. [Literature review, Model development, Survey of students and nonstudent adults, Givers become anxious when they are highly motivated to elicit desired reactions from their recipients but are pessimistic about their prospects of success.] 18

Understanding the Customer Base of Service Providers: An Examination of the Differences Between Switchers and Stayers. Jaishankar Ganesh, Mark J. Arnold, and Kristy E. Reynolds, *Journal of Marketing*, 64 (July 2000), pp. 65–87. [Literature review, Hypotheses, Two studies, Consumers' use of banking services, Impacts, Overall satisfaction, Satisfaction with service dimensions, Involvement, Customer loyalty, Statistical analysis, Implications.] 19

Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters. Matthew L. Meuter, Amy L. Ostrom, Robert I. Roundtree, and Mary Jo Bitner, *Journal of Marketing*, 64 (July 2000), pp. 50–64. [Literature review, Critical incident study (satisfying and dissatisfying), Sources, Consumer reactions, Comparisons, Interpersonal encounter satisfaction, Assessment, Managerial implications.] 20

Consumer Response to Negative Publicity: The Moderating Role of Commitment. Rohini Ahluwalia, Robert E. Burnkrant, and H. Rao Unnava, *Journal of Marketing Research*, 37 (May 2000), pp. 203–14. [Literature review, Hypotheses, Three experiments, Consumers who are committed to a brand counterargue negative information and can resist information that is likely to induce switching behavior.] 21

A Hierarchical Bayes Model for Assortment Choice. Eric T. Bradlow and Vithala R. Rao, *Journal of Marketing Research*, 37 (May 2000), pp. 259–68. [Literature review, Experiment, Set of eight popular magazines, Effects, Price, Attributes, Features, Selection, Statistical analysis, Managerial implications.] 22

Impact of Product-Harm Crises on Brand Equity: The Moderating Role of Consumer Expectations. Niraj Dawar and Madan M. Pillutla, *Journal of Marketing Research*, 37 (May 2000), pp. 215–26. [Literature review, Expectations–evidence framework, Hypotheses, Field survey and two laboratory experiments, Impacts, Consumers' interpretation of the evidence from firm response, Managerial implications.] 23

The Evolution of Brand Preferences and Choice Behaviors of Consumers to a Market. Carrie M. Heilman, Douglas Bowman, and Gordon P. Wright, *Journal of Marketing Research*, 37 (May 2000), pp. 139–55. [Literature review, Logit-mixture model with time-varying parameters, Consumer panel data, Stages (information collection, extended to lesser-known brands, information consolidation), Impacts, Product experience and learning, Statistical analysis, Implications.] 24

Choosing What I Want Versus Rejecting What I Do Not Want: An Application of Decision Framing to Product Option Choice Decisions. C. Whan Park, Sung Youl Jun, and Deborah J. MacInnis, *Journal of Marketing Research*, 37 (May 2000), pp. 187–202. [Literature review, Model presentation, Hypotheses, Three studies, Option framing, Psychological reactions, Moderators (option prices, product category prices, regret anticipation, product category commitment), Managerial effects.] 25

Assessing a Place to Live: A Quality of Life Perspective. Glen Riecken, Don Shemwell, and Ugur Yavas, *Journal of Nonprofit and Public Sector Marketing*, 7 (No. 2, 1999), pp. 17–29. [Survey of community leaders, Factors, Weather, Crime, Economy, Education, Health, Housing, Leisure, Transportation, Arts, Importance/performance analysis, Policy implications.] 26

Assessing the Effects of Quality, Value, and Customer Satisfaction on Consumer Behavioral Intentions in Service Environments. J. Joseph Cronin Jr., Michael K. Brady, and G. Tomas M. Hult, *Journal of Retailing*, 76 (Summer 2000), pp. 193–218. [Literature review, Model testing, Hypotheses, Two studies, Multiple service providers, Direct and indirect effects, Relationships, Statistical analysis.] 27

1.2 Legal, Political and Economic Issues

See also 51, 102, 151, 176, 188, 198, 199, 203, 227

Ethical and Online Privacy Issues in Electronic Commerce. Eileen P. Kelly and Hugh C. Rowland, *Business Horizons*, 43 (May/June 2000), pp. 3–12. [Discussion, Information gathering, Legal aspects, Freedom of choice, Voluntary and informed consent, Proposed legislation, Industry reaction, Managerial recommendations.] 28

The Measurement of Intellectual Property Rights Protection. Robert L. Ostergard Jr., *Journal of International Business Studies*, 31 (Second Quarter 2000), pp. 349–60. [Discussion, Empirical research, Comparisons, Countries, Law and enforcement measures, Protection score analysis (copyright, patent, trademark), Assessment.] 29

Covenants Not to Compete. Erica B. Garay, *Marketing Management*, 9 (Summer 2000), pp. 61–63. [Acquisitions and mergers, Legislation, Court decisions, Enforcing covenants arising in connection with the sale of a business, Limits to enforcement, Assessment.] 30

U.S. Trust Busters Eye Net Markets. Dan Gottlieb, *Purchasing*, 128 (June 15, 2000), pp. S67, S69, S72. [Discussion, Net trade exchanges, Legal aspects, Market power, Major industry players, Acquisitions and mergers, Anticompetitive effects, Assessment.] 31

1.3 Ethics and Social Responsibility

See also 28, 151, 210, 228

Representing the Perceived Ethical Work Climate Among Marketing Employees. Barry J. Babin, James S Boles, and Donald P Robin, *Journal of the Academy of Marketing Science*, 28 (Summer 2000), pp. 345–58. [Literature review, Survey of employees, Models, Responsibility/trust, Peer behavior, Ethical norms, Selling practices, Role ambiguity, Role conflict, Job satisfaction, Organizational commitment, Statistical analysis, Implications.] 32

Crime and Small Business: An Exploratory Study of Cost and Prevention Issues in U.S. Firms. Donald F. Kuratko, Jeffrey S. Hornsby, Douglas W. Naffziger, and Richard M. Hodgetts, *Journal of Small Business Management*, 38 (July 2000), pp. 1–13. [Literature review, Survey, Level of concern, Crime prevention actions, Training provided, Perceptions of crime against business, Annual cost of crime, Impact of industry type, Statistical anlaysis.] 33

Making Business Sense of Environmental Compliance. Jasbinder Singh, *Sloan Management Review*, 41 (Spring 2000), pp. 91–100. [Discussion, Partnerships, Environmental and plant managers, Savings, Strategies, Review plant operations, Find best times to install pollution-control equipment and upgrade production technology, Allocate environmental costs, Integrate business and environmental decisions, Examples.] 34

Corporate Responsibility Audits: Doing Well by Doing Good. Sandra Waddock and Neil Smith, *Sloan Management Review*, 41 (Winter 2000), pp. 75–83. [Vision versus practice, CEO commitment, Teams, Corporate culture, Mission statement, Stakeholder elements, Existing policies and practices, Functional areas (human resources, environmental practices, quality systems, community relations), Examples.] 35

2. MARKETING FUNCTIONS

2.1 Management, Planning, and Strategy

See also 9, 30, 31, 32, 33, 34, 35, 64, 67, 68, 69, 71, 73, 74, 77, 82, 83, 85, 86, 90, 96, 97, 98, 106, 112, 114, 115, 116, 117, 120, 121, 122, 124, 125, 126, 127, 134, 135, 145, 146, 148, 149, 153, 154, 161, 162, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 179, 183, 184, 186, 193, 202, 207, 210, 212, 214, 219, 221, 228

Avoiding the Complexity Trap. Alan Brache and Peter M. Tobia, *Across the Board*, 37 (June 2000), pp. 42–46. [Sustainable niches, Problems, Availability of outsourcing, Broadening capability and plunging price of technology, Workforce mobility, E-commerce, Impacts, Focus, Critical resources, Information on costs, Examples.] 36

Laying Off Risk. Stan Davis and Christopher Meyer. *Across the Board*, 37 (April 2000), pp. 33–37. [Insuring against risk, Risk-related rewards, Organizing around risk, Hedging, Core competencies, Value creation, Examples.] 37

The Negotiation Industry. Lee Edson, *Across the Board*, 37 (April 2000), pp. 14–20. [Discussion, Use in hiring process, International, Special training, Educational initiatives, Win–win model, Examples.] 38

The Secrets of Performance Appraisal. Dick Grote, *Across the Board*, 37 (May 2000), pp. 14–20. [Corporate culture, Organizational expectations, Identification of specific core competencies, Evaluation, Mastery descriptions, Role of objectivity, Examples.] 39

Condition Critical. Phillip L. Polakoff and David G. Anderson, *Across the Board*, 37 (May 2000), pp. 42–47. [Health and safety programs, Control, Lost time costs, Risk shifting strategies, Helping employees manage their own care, Assessment, Guidelines.] 40

The Effects of Formal Strategic Marketing Planning on the Industrial Firm's Configuration, Structure, Exchange Patterns, and Performance. Andy Claycomb, Richard Germain, and Cornelia Droge, *Industrial Marketing Management*, 29 (May 2000), pp. 219–34. [Literature review; Survey (Council of Logistics Managment); Impacts; Use of integrative committees and mechanisms, specialization, decentralized decision making, and formal performance measurement (both internal and benchmarking).] 41

Implementing a Customer Relationship Strategy: The Asymmetric Impact of Poor Versus Excellent Execution. Mark R. Colgate and Peter J. Danaher, *Journal of the Academy of Marketing Science*, 28 (Summer 2000), pp. 375–87. [Literature review; Survey of bank customers; Satisfaction, performance, usage of bank, Personal banker; Good and bad strategies; Switching activity; Behavioral intentions; Statistical analysis; New Zealand.] 42

Superordinate Identity in Cross-Functional Product Development Teams: Its Antecedents and Effect on New Product Performance. Rajesh Sethi, *Journal of the Academy of Marketing Science*, 28 (Summer 2000), pp. 330–44. [Literature review, Hypotheses, Survey of key informants in cross-functional teams, Impacts, Special team structure, Traditional team factor, Interaction effects, Statistical analysis, Managerial implications.] 43

Business Planning Practices in Small Size Companies: Survey Results. Surendra S. Singhvi, *Journal of Business Forecasting*, 19 (Summer 2000), pp. 3–4, 6, 8. [Primary objectives for preparing a plan, Responsibility, Planning horizon, Plan update, Achievement, Annual budget, Board approval, Financial success, Recommendations.] 44

Journal of Business Research, 47 (January 2000), pp. 3–89. [Eight articles on dynamics of strategy, Executive pay and UK privatization, Nonprofit organization responses to anticipated changes in government support for HIV/AIDS services, Evolving complex organizational structures in new and unpredictable environments, Innovation teams, Institutional foundations of success and failure, Impact of technology policy integration on strategy, Business transformation, Impact of environmentally linked strategies on competitive advantage, Many countries.] 45

Relationship of Firm Size, Initial Diversification, and Internationalization with Strategic Change. Parshotam Dass, *Journal of Business Research*, 48 (May 2000), pp. 135–46. [Theoretical discussion, Hypotheses, Data collection (COMPUSTAT II database), Variables, Initial and changes in product diversity, Industry performance, Risk, Slack, Firm size, International diversification, Interactions, Statistical analysis.] 46

Organizational Values: The Inside View of Service Productivity. Dawn Dobni, J.R. Brent Ritchie, and Wilf Zerbe, *Journal of Business Research*, 47 (February 2000), pp. 91–107. [Literature review, Survey of service firms, Impacts, Employee mutualism, Market leadership, Customer intimacy, Operational efficiency, Organizational preservation, Change aversion, Social responsibility, Value systems (entrepreneurial, performance-pressured, integrated, temperate), Statistical analysis, Canada.] 47

Firm Characteristics Influencing Export Propensity: An Empirical Investigation by Industry Type. Rajshekhar G. Javalgi, D. Steven White, and Oscar Lee, *Journal of Business Research*, 47 (March 2000), pp. 217–28. [Literature review, Hypotheses, Survey, Comparisons, Export versus nonexport firms, Variables, Number of employees, Total sales, Years in business, International trade activity, Primary industrial classification, Firm ownership, Statistical analysis.] 48

Benchmarking Cultural Transition. Roger Connors and Tom Smith, *Journal of Business Strategy*, 21 (May/June 2000), pp. 10–12. [Corporate culture, The best benchmarks are keyed to important before-and-after results the organization must achieve and to the beliefs and actions that produce those results, Assessment.] 49

Investigation of Factors Contributing to the Success of Cross-Functional Teams. Edward F. McDonough III, *Journal of Product Innovation Management*, 17 (May 2000), pp. 221–35. [Literature review, Model presentation, Survey of new product development professionals, Outcome and process reasons for adopting cross-functional teams, Interactions, Stage setters, Enablers, Team behaviors, Performance, Assessment.] 50

Environmental and Ownership Characteristics of Small Businesses and Their Impact on Development. William B. Gartner and Subodh Bhat, *Journal of Small Business Management*, 38 (July 2000), pp. 14–26. [Literature review, Survey, Growth expectations, Effects, Crime, Neighborhood appearance, Ethnicity of owner, Legal structure of firm, Firm type and size, Statistical analysis, Recommendations.] 51

Strategic Planning in the Military: The U.S. Naval Security Group Changes Its Strategy, 1992–1998. William Y. Frentzell II, John M. Bryson, and Barbara C. Crosby, *Long Range Planning (UK)*, 33 (June 2000), pp. 402–29. [Discussion, Creating vision, Middle and top-level management involvement, Stakeholder and SWOT analyses, Scenario planning, Cognitive and oval mapping, Assessment.] 52

The Future.org. Raymond E. Miles, Charles C. Snow, and Grant Miles, *Long Range Planning (UK)*, 33 (June 2000), pp. 300–21. [Collaboration-based organizational model for innovation, Essential conditions (time, trust, territory), Design principles (self-management, behavioral protocols, shared strategic intent, equitable sharing of returns), Barriers (institutional, philosophical, organizational), Examples.] 53

Business Domain Definition Practice: Does It Affect Organisational Performance? Jatinder S. Sidhu, Edwin J. Nijssen, and Harry R. Commandeur, *Long Range Planning (UK)*, 33 (June 2000), pp. 376–401. [Literature review, Hypotheses, Survey of managers, Focus, Stable versus turbulent environments, Impacts, Customer need, Technological competence, Assessment, Implications, The Netherlands.] 54

Marketing Decision Support Systems for Strategy Building. Sanjay K. Rao, *Marketing Health Services*, 20 (Summer 2000), pp. 15–18. [Pharmaceutical products, Customer and market environments, System outputs (interaction between pricing and other marketing mix strategies), Cash flows, Outcomes, Assessment.] 55

What's in a Name? New CPO Title Reflects Buying's Strategic Role. William Atkinson, *Purchasing*, 128 (June 1, 2000), pp. 45, 49–51. [Chief procurement officer, Organizational structure, Functions, Responsibilities, Top management support, Implications for suppliers, Examples.] 56

Supporting a For-Profit Cause. Guy Kawasaki, *Sales and Marketing Management*, (May 2000), pp. S16–S19. [Corporate culture, Customer focused, Morale, Impacts, Creating a good product and service, Sense of ownership, Training, Empowerment, Support, Examples.] 57

A Position of Power. Chad Kaydo, *Sales and Marketing Management*, (June 2000), pp. 104–106, 108, 110, 112, 114. [Corporate image, Product positioning, Product differentiation, Factors, Identify the difference, Make it relevant, Keep it simple, Watch the competition, Examples.] 58

Technology Is Not Enough: Improving Performance by Building Organizational Memory. Rob Cross and Lloyd Baird, *Sloan Management Review*, 41 (Spring 2000), pp. 69–78. [Organizational learning, Explicit and tacit knowledge, Databases, Social bonding, Work processes and support systems, Targeting, Structuring, Embedding, Examples.] 59

Outsourcing Innovation: The New Engine of Growth. James Brian Quinn, *Sloan Management Review*, 41 (Summer 2000), pp. 13–28. [Discussion, Basic and early-stage research, Business processes, New-product introductions, Impacts, Resource limits, Specialist talents, Multiple risks, Attracting talent, Speed, Examples.] 60

Leading Laterally in Company Outsourcing. Michael Useem and Joseph Harder, *Sloan Management Review*, 41 (Winter 2000), pp. 25–38. [Personal interviews, Senior managers, Leadership capabilities (strategic thinking, deal making, partnership governing, managing change), Assessment.] 61

2.2 Retailing

See also 73, 87, 96, 99, 100, 105, 109, 110, 132, 133, 215, 224

A Longitudinal Analysis of Satisfaction and Profitability. Kenneth L. Bernhardt, Naveen Donthu, and Pamela A. Kennett, *Journal of Business Research*, 47 (February 2000), pp. 161–71. [Literature review, Hypotheses, Consumer survey, Impacts, Customer and employee satisfaction, Statistical analysis, Managerial implications, Fast-food restaurant industry.] 62

Towards Understanding Consumer Response to Stock-Outs. Katia Campo, Els Gijsbrechts, and Patricia Nisol, *Journal of Retailing*, 76 (Summer 2000), pp. 219–42. [Literature review; Model estimation; Store intercept; Characteristics (product, consumer, situation); Costs; Impacts; Item, package size, and store switching; Purchase deferment and cancellation; Statistical analysis; Belgium.] 63

Attention, Retailers! How Convenient Is Your Convenience Strategy? Kathleen Seiders, Leonard L. Berry, and Larry G. Gresham, *Sloan Management Review*, 41 (Spring 2000), pp. 79–89.

[Trends, Access, possession, and transaction convenience; Locating the right product; Integrated approach; Examples.] 64

Customer Relationship Management. Susan Reda, *Stores*, 82 (April 2000), pp. 33–36. [Target markets, Databases, Software packages, Consultants, Role of marketing department, Examples.] 65

Real Estate, Customer Research Become Key Tools in Service Merchandise Revival. Susan Reda, *Stores*, 82 (June 2000), pp. 118, 120, 122. [Discussion, Consultants, Customer profiles, Product categories, Point-of-sale information, Software packages, Web site, Internet alliances, Trade area analysis, Case study.] 66

Rethinking the Rules. Susan Reda, *Stores*, 82 (June 2000), pp. 34–35, 38. [Retailing industry, Impacts, Online revolution, Confronting new realities, More fluid environment, Logistics expertise, Acquisition strategy, Bricks-and-mortar advantages, Examples.] 67

2.3 Channels of Distribution

See also 56, 84, 91, 92, 94, 95, 104, 147, 163, 165, 185, 190

Industrial Marketing Management, 29 (July 2000), pp 285–386 [Nine articles on business marketing networks, Implementing programmatic initiatives in manufacturer–retailer networks, Supplier relations, Interconnectedness, Strategic alliances, Partner as customer, Relationship strategy, Quality, Customer retention, Purchasing behavior, Satisfaction in industrial markets] 68

On Interfirm Power, Channel Climate, and Solidarity in Industrial Distributor–Supplier Dyads. Keysuk Kim, *Journal of the Academy of Marketing Science*, 28 (Summer 2000), pp. 388–405. [Literature review, Model estimation, Hypotheses, Survey, Measures, Supplier and distributor power, Coercive and noncoercive influence strategy, Trust, Relationship continuity, Solidarity, Statistical analysis.] 69

A Brand's Advertising and Promotion Allocation Strategy: The Role of the Manufacturer's Relationship with Distributors as Moderated by Relative Market Share. Kenneth Anselmi, *Journal of Business Research*, 48 (May 2000), pp. 113–22. [Literature review; Hypotheses; Survey of manufacturers; As exchange relationships become more relational, manufacturers increase advertising allocations, More discrete relationships, increase allocation to promotion; Market share moderates the influence of exchange relationship type] 70

Relationship Marketing Activities, Commitment, and Membership Behaviors in Professional Associations. Thomas W. Gruen, John O. Summers, and Frank Acito, *Journal of Marketing*, 64 (July 2000), pp. 34–49 [Literature review, Model presentation, Hypotheses, Survey of life insurance agents, Measures, Commitment (affective, continuance, normative), Impacts, Membership retention, Exchange-based participation, Cooperatively based coproduction, Statistical analysis.] 71

Sales Through Sequential Distribution Channels: An Application to Movies and Videos. Donald R. Lehmann and Charles B. Weinberg, *Journal of Marketing*, 64 (July 2000), pp. 18–33. [Literature review, Model structure and analysis, Data from 35 movies, Exponential sales curves, Optimal release times, Assessment.] 72

Control Mechanisms and the Relationship Life Cycle: Implications for Safeguarding Specific Investments and Developing Commitment. Sandy D. Jap and Shankar Ganesan, *Journal of Marketing Research*, 37 (May 2000), pp. 227–45. [Literature review, Conceptual framework, Hypotheses, Survey of retailers, Measures, Transaction-specific investments, Relational norms, Explicit contracts, Supplier's commitment, Performance, Conflict level, Relationship satisfaction and phase, Interdependence magnitude and asymmetry, Statistical analysis.] 73

Organizing Distribution Channels for Information Goods on the Internet. Rajiv Dewan, Marshall Freimer, and Abraham Seidmann, *Management Science*, 46 (April 2000), pp. 483–95. [Electronic commerce, Electronic publishing, Digital and pricing content, Internet service providers, Industrial organization, Spatial competition, Industry structure, Assessment, Managerial implications.] 74

Price Protection in the Personal Computer Industry. Hau L. Lee, V. Padmanabhan, Terry A. Taylor, and Seungjin Whang, *Management Science*, 46 (April 2000), pp. 467–82 [Literature review, Obsolescence-prone market, Single- and two-buying-opportunity models, Channel coordination, Supply chain management, Incentives, Numerical example.] 75

Pursuing Risk-Sharing, Gain-Sharing Arrangements. James B.L. Thomson and James C. Anderson, *Marketing Management*, 9 (Summer 2000), pp. 40–47. [Customer–supplier relations, Market strategy, Implementation (assess customer measurement systems, determine products and services, build historical database, measurement responsibility, sharing risks and gains, outline specific actions and initiate the agreement), Case study, Hospital supply industry.] 76

Distributors: How Good Are They? James P. Morgan, *Purchasing*, 128 (May 4, 2000), pp 50–52, 54, 58. [Survey of purchasing professionals, Percentage of companies' purchases, Product categories, Needs priorities, Performance ratings, Use of e-business tools, Problems (prices, delivery, damage, cost control, e-business, inventory, personnel, information), Slow implementation, Examples.] 77

2.4 Electronic Marketing

See also 3, 5, 28, 31, 67, 74, 77, 128, 132, 133, 151, 179, 184, 213

Beating the Banner Ad. Christine Blank, *American Demographics*, 22 (June 2000), pp. 42–44. [E-mail campaigns, Target markets, Entertainment, Multisensory, Interactive, Click-and-play video messages, Rich media, Costs, Examples.] 78

Mouse-Trapping the Student Market. Rebecca Gardyn, *American Demographics*, 22 (May 2000), pp. 30, 32–34. [In-school marketing, Ad-supported mousepads, Effectiveness, Comparisons, Internet banner ads, Online sweepstakes, Newspaper ads, Case study.] 79

Cracking the Niche. Christina Le Beau, *American Demographics*, 22 (June 2000), pp. 38–40. [Online marketing, Market segments, Web-based groups with focused interests, Becoming part of a community, Examples.] 80

Internet: A Vehicle for On-line Shopping. Venkatakrishna V. Bellur, *Finnish Journal of Business and Economics*, 49 (No. 2, 2000), pp. 191–207. [Literature review, Survey of households, Demographic and socioeconomic profile, Internet access and usage rates, Impacts, Occupation, Income, Discriminant analysis.] 81

Harvard Business Review, 78 (May/June 2000), pp 84–114. [Three articles on e-business, Syndication, Roles, Structure, Business-to-business marketplaces, E-hubs, Integrating virtual and physical operations, Examples.] 82

How to Acquire Customers on the Web. Donna L. Hoffman and Thomas P. Novak, *Harvard Business Review*, 78 (May/June 2000), pp. 179–80, 183–86, 188. [Discussion, Banner ads, Affiliate marketing, Integrated strategy (mass media, online advertising, strategic partnerships, word of mouth, free links, PR), Examples.] 83

The All-in-One Market. Paul Nunes, Diane Wilson, and Ajit Kambil, *Harvard Business Review*, 78 (May/June 2000), pp. 19–20. [Trends, Evolution, Online transactions, Mechanisms, Price competition, Examples.] 84

Going Up! Vertical Marketing on the Web. Sunny Baker and Kim Baker, *Journal of Business Strategy*, 21 (May/June 2000), pp.

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The Eight Deadly Assumptions of E-Business. Alan Brache and Jim Webb, *Journal of Business Strategy*, 21 (May/June 2000), pp. 13–17. [Discussion, Technology is the answer, Get on the e-business bandwagon, Expand the customer base, Enables global expansion, Reengineering will help to better serve e-business needs, Web sites will ensure more e-business, Delegate development and implementation to the IT department or to a consultant, Going digital quickly, Assessment.] 86

Frictionless Commerce? A Comparison of Internet and Conventional Retailers. Erik Brynjolfsson and Michael D. Smith, *Management Science*, 46 (April 2000), pp. 563–85. [Literature review, Data collection, Competition, Price changes, Menu costs, Price dispersion, Asymmetrically informed consumers and search costs, Product and retailer heterogeneity, Assessment.] 87

Debunking the Myths of Web Site Promotion. Joyce Flory, *Marketing Health Services*, 20 (Summer 2000), pp. 31–35. [Discussion, Site registration, Registration services, Search engines, Specific types of information, Impacts, Promotion efforts, Awards, Press releases, Contests and giveaways, Success, Guidelines.] 88

Branding on the Internet. Larry Chiagouris and Brant Wansley, *Marketing Management*, 9 (Summer 2000), pp. 34–38. [Discussion, Relationship-building continuum, Impacts, E-branding tactics, Measurement issues, Examples.] 89

Ride or Drive? Ralph A. Oliva, *Marketing Management*, 9 (Summer 2000), pp. 58–60. [Web-based hubs, Driving (starting your own digital marketplace for multiple buyers and sellers), Riding (signing on to a hub run by another firm), Managing cognitive spaces, Spin ups, Hub wars, Ride versus drive, Assessment.] 90

Buyers Are Hot on Internet, Wary About E-Procurement. *Purchasing*, 128 (June 15, 2000), pp. S6–S7, S10, S13. [Survey, Attitudes, Communications (requests for information and quotes from suppliers, shipments tracking and expediting, ordering), Costs, Ease of use, Security, Reliability, Current or projected use, Examples.] 91

E-Auction Model Morphs to Meet Buyers' Needs. Anne Millen Porter, *Purchasing*, 128 (June 15, 2000), pp. S31–S32, S34, S36, S39, S40, S44, S46. [Discussion, Reverse e-auctions, Bidding involving many suppliers, Impacts, Profit margins, Consultants, Software packages, Requirements, Transactions, Markets, Outsourcing, Examples.] 92

Cashing In. Ginger Conlon, *Sales and Marketing Management*, (June 2000), pp. 94–96, 102. [Business growth, Dot-com businesses, Market potentials, Factors, Understand the audience, Act quickly, Risk, Stability, Examples.] 93

Why Dealers Must Buy In to the Web. Brent Keltner, *Sales and Marketing Management*, (April 2000), pp. 29–30. [Discussion, Benefits, Strategies, Focus on underperforming products, Integrate sales and marketing, Offer incentives, Provide technical support, Examples.] 94

Clicks and Misses. Melinda Ligos, *Sales and Marketing Management*, (June 2000), pp. 68–70, 72, 74, 76. [E-business, Problems, Alienating channel partners, Not focusing on core competencies, Not integrating customer service systems, Trying to serve mass market instead of existing customers, Not involving salespeople, Not knowing when to outsource, Examples.] 95

Finding Sustainable Profitability in Electronic Commerce. John M. de Figueiredo, *Sloan Management Review*, 41 (Summer 2000), pp. 41–52. [E-commerce product continuum, Market strategy (commodity products, quasi commodity, look and feel goods, look and feel with variable quality), Incumbents versus new entrants, Sustaining competitive advantage, Examples] 96

Fast Venturing: The Quick Way to Start Web Businesses. Ajit Kambil, Erik D. Eselius, and Karen A. Monteiro, *Sloan Management Review*, 41 (Summer 2000), pp. 55–67. [Model presentation; Roles (innovators, equity and operational partners); Stages (illumination, investigation, implementation); Why, when, and how companies should fast venture; Venture networks; Examples.] 97

Building Stronger Brands Through Online Communities. Gil McWilliam, *Sloan Management Review*, 41 (Spring 2000), pp. 43–54. [Discussion, Traditional user groups, Forum for exchange of common interests, Attracting new members, Links to other sites, Brand owner's control over content, Skills needed to manage online communities, Examples.] 98

Domain Names Emerge as Key Tools for On-line Retail Marketing. Jennifer Karas, *Stores*, 82 (May 2000), pp. 94, 96, 98. [Discussion, Name by which a company is known on the Internet, Advantages, Professional and credible Web presence, Name competition, Examples.] 99

In-Store Interactive Systems Take on Major Role in Drawing Technology-Savvy Customers. Susan Reda, *Stores*, 82 (May 2000), pp. 44, 46, 48 [Study, Integration of online and in-store activities (digital signage, electronic messaging, kiosks), Consumer expectations, Shopping behavior, Examples.] 100

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Early Supplier Involvement in Customer New Product Development: A Contingency Model of Component Supplier Intentions. Douglas W. LaBahn and Robert Krapfel, *Journal of Business Research*, 47 (March 2000), pp. 173–90. [Literature review, Hypotheses, Survey, Customer power advantage, Adherence to agreements, Customer promise, Supplier intentions, Interdependence, Statistical analysis, Implications.] 101

An Industry Still in Need of Integration. Brian Milligan, *Purchasing*, 128 (May 18, 2000), pp. 147, 149–50. [Business growth, Intermodal transport, Acquisitions and mergers, Government regulation, Examples.] 102

Service Providers Under Pressure to Control Rates. Brian Milligan, *Purchasing*, 128 (April 20, 2000), pp. 113, 116–17, 119, 121. [Transportation, Third-party logistics, Industry growth, Purchasing managers, Time constraints, Bundled services, Costs, Internet investments, Software packages, Examples.] 103

Supply Chain Software Moves to the Web. Brian Milligan, *Purchasing*, 128 (April 6, 2000), pp. 67–68. [Transportation, Impacts, Business processes, Forecasting shipments, Demand forecasts, Meeting anticipated transportation requirements, Needed improvements, Examples.] 104

E-Replenishment System Counters Continuing Problem of Supermarket Out-of-Stocks. Susan Reda, *Stores*, 82 (April 2000), pp. 70, 72. [Supply chain initiatives, POS system investments, Scanning data, Software packages, Collaborative planning, Initialization, Execution, Monitoring, Examples.] 105

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Advertised Reference Price Effects on Consumer Price Estimates, Value Perception, and Search Intention. Bruce L. Alford and Brian T. Engelland, *Journal of Business Research*, 48 (May

2000), pp. 93–100. [Literature review, Hypotheses, Experiment, Plausible and implausible price exposure conditions, Statistical analysis, Practical implications.] 107

An Investigation of Reference Price Segments. Tridib Mazumdar and Purushottam Papatla, *Journal of Marketing Research*, 37 (May 2000), pp. 246–58. [Literature review, Model development, Data collection (ERIM scanner panel of ACNielsen), Use of internal and external reference prices, Brand preferences and responses to marketing-mix variables, Statistical analysis, Managerial implications.] 108

Insights into Cross- and Within-Store Price Search: Retailer Estimates vs. Consumer Self-Reports. Joel E. Urbany, Peter R. Dickson, and Alan G. Sawyer, *Journal of Retailing*, 76 (Summer 2000), pp. 243–58. [Literature review, Surveys, Attitudes, Consumer patronage behavior, Price comparison frequency, Search for and responsiveness to price specials, Belief discrepancies, Assessment, Theoretical and managerial implications.] 109

Burden of Frequent Price Changes Spurs Development of Automated Pricing Systems. Michael Hartnett, *Stores*, 82 (May 2000), pp. 56, 58. [Retail chains; Software packages; Category management; Pricing rules can be applied to maintain family group and parity pricing by item, flavor, size, brand, competitor's pricing, margins, and the retailer's value image.] 110

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Product Development Partnerships: Balancing the Needs of OEMs and Suppliers. Morgan L. Swink and Vincent A. Mabert, *Business Horizons*, 43 (May/June 2000), pp. 59–68. [Discussion, OEM needs (providers of scarce resources and capabilities, support of global product strategies, minimized risks), Supplier needs (rewards for up-front involvement, protected business interests, shared wealth), Success, Guidelines.] 111

Building an Innovation Factory. Andrew Hargadon and Robert I. Sutton, *Harvard Business Review*, 78 (May/June 2000), pp. 157–66. [Knowledge-brokering cycle, Factors, Capturing new ideas, Keeping ideas alive, Imagining new uses for old ideas, Putting promising concepts to the test, Examples.] 112

Price and Brand Name as Indicators of Quality Dimensions for Consumer Durables. Merrie Brucks, Valarie A. Zeithaml, and Gillian Naylor, *Journal of the Academy of Marketing Science*, 28 (Summer 2000), pp. 359–74. [Literature review, Model presentation, Hypotheses, Laboratory experiment, Ease of use, Versatility, Durability, Service ability, Performance, Prestige, Consumers' judgment processes and inferences, Statistical analysis.] 113

Introducing Short-Term Brands: A New Branding Tool for a New Consumer Reality. Dan Herman, *Journal of Brand Management (UK)*, 7 (May 2000), pp. 330–40. [Changes in consumer preferences and behavior, Market strategy, Evolving and variety brands, Planned limited life expectancies, Value added, Examples.] 114

A Survey of Brand Risk Management. Rory F. Knight and Deborah J. Pretty, *Journal of Brand Management (UK)*, 7 (May 2000), pp. 353–65. [Discussion; Brand significance and perception; Core qualities of brands across regions, industry sectors, and organizational position; Threats; Protection mechanisms; Brand insurance; Brand valuation; Assessment; Many countries.] 115

Call Branding: Identifying, Leveraging, and Managing New Branding Opportunities. Kevin M. Waters, *Journal of Brand Management (UK)*, 7 (May 2000), pp. 321–29. [Modifying a brand to correspond with its verbal identity (Kraft Mayo, FedEx), Partial declaration and use, Acronyms, Success, Guidelines.] 116

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Impact of a Late Entrant on the Diffusion of a New Product/Service. Trichy V. Krishnan, Frank M. Bass, and V. Kumar, *Journal of Marketing Research*, 37 (May 2000), pp. 269–78. [Model testing, Mathematical equations, Brand-level sales data in multiple markets, Effects, Market potentials, Diffusion speed of the category and of incumbent brands, Statistical analysis.] 118

Customization of Product Technology and International New Product Success: Mediating Effects of New Product Development and Rollout Timeliness. George M. Chryssochoidis and Veronica Wong, *Journal of Product Innovation Management*, 17 (July 2000), pp. 268–85 [Literature review, Model proposal, Hypotheses, Interviews with managers in multinational companies, Impacts, Scheduling, Individual country requirements, Statistical analysis.] 119

Company Competencies as a Network: The Role of Product Development. Hanne Harmsen, Klaus G. Grunert, and Karsten Bove, *Journal of Product Innovation Management*, 17 (May 2000), pp. 194–207. [Literature review, Survey of managers, Rankings, Perceived success factors and problems, Assessment, Implications.] 120

Harnessing Tacit Knowledge to Achieve Breakthrough Innovation. Ronald Mascitelli, *Journal of Product Innovation Management*, 17 (May 2000), pp. 179–93. [Discussion, Model presentation, Methods, Achieve emotional commitment and personal involvement from design team members, Use of early and frequent prototyping, Face-to-face interaction during product development, Examples, Managerial implications.] 121

Technological Innovativeness as a Moderator of New Product Design Integration and Top Management Support. Morgan Swink, *Journal of Product Innovation Management*, 17 (May 2000), pp. 208–20. [Literature review, Model presentation, Hypotheses, Study of new product development projects, Effects, Financial performance, Design quality, Time-based performance, Interactions, Statistical analysis, Managerial implications.] 122

Consumer-Level Factors Moderating the Success of Private Label Brands. Rajeev Batra and Indrajit Sinha, *Journal of Retailing*, 76 (Summer 2000), pp. 175–91. [Literature review, Model estimation, Mall-intercept study, Measures (consequences of purchase mistake, degree of quality variation in category, search versus experience nature of category, price consciousness), Statistical analysis, Managerial implications.] 123

Choosing the Right Branding Expert. Victoria Barkan and Debra Semans, *Marketing Management*, 9 (Summer 2000), pp. 29–31. [Discussion, Understanding your needs, Approach/methodology, Objectivity and bias, Experience, Future perspective, Leading-edge thinking, Benchmark results, Client satisfaction, Stay involved and visible, Assessment.] 124

Market-Driven Product Development. Stephan A. Butscher and Michael Laker, *Marketing Management*, 9 (Summer 2000), pp. 48–53. [Target-costing pricing approach, Definition of target segments, Competitive advantages and disadvantages, Product positioning, Fine-tuning product design and pricing, Market simulations, Target costs, Examples.] 125

Brand Waves: Building Momentum Throughout the Ownership Cycle. Peter H. Farquhar, *Marketing Management*, 9 (Summer 2000), pp. 14–21. [Discussion, Ownership cycle, Trigger, Consideration, Drivers (awareness, relevance, differentiation, quality, affordability, availability), Conversion, Purchase and confirmation, Taking credit, Value, Examples.] 126

How to Build a Billion Dollar Business-to-Business Brand. Don E. Schultz and Heidi F. Schultz, *Marketing Management*, 9 (Summer 2000), pp. 22–28. [Discussion; Evolution of b-to-b companies; Product-, distribution-, and customer-driven; Brand structures and policies; Building and development; Communication; Measuring results; Example.] 127

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Redeeming Qualities. Jennifer Lach, *American Demographics*, 22 (May 2000), pp. 36–38. [Study, Incentives, S&H greenpoints.com, Online participation, Customer retention, Age groups, Incomes, Effectiveness, Examples.] 128

An Evaluation of State Sponsored Promotion Programs. Timothy J. Wilkinson and Lance Eliot Brouthers, *Journal of Business Research*, 47 (March 2000), pp. 229–36 [Data collection (relationships between program offerings and state exports), Variables (direct exports, trade shows, trade missions, foreign offices, market information activities, population), Statistical analysis, Implications.] 129

Money Isn't Everything. Vincent Alonzo, *Sales and Marketing Management*, (April 2000), pp. 47–48. [Sweepstakes, Appeals, Effectiveness, Impacts, Long-term sales, Offering prizes appropriate for clients, Examples.] 130

The Shows Will Go On. Danielle Harris, *Sales and Marketing Management*, (May 2000), pp. 85–88. [Discussion, Trade shows, Factors, Increasing booth traffic and generating quality leads, Motivating salespeople, Budgets, Examples.] 131

Internet Retailers Shift Focus from Attracting to Retaining On-line Customers. Maureen Licata, *Stores*, 82 (June 2000), pp. 66, 68, 70, 72. [Value-focused customers, Loyalty incentives, Discounts, Giveaways, Contests, Sweepstakes, Free shipping, Customer databases, Impacts, Content, Community, Communication, Examples.] 132

Electronic Coupons Find Growing Uses for Both Stores and E-Commerce Sites. Tony Seideman, *Stores*, 82 (April 2000), pp 104, 106. [Target markets, Flexibility, Costs, Customer databases, Profiles, Effectiveness, Examples.] 133

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Linking Advertising and Brand Value. Irene M. Herremans, John K. Ryans Jr., and Raj Aggarwal, *Business Horizons*, 43 (May/June 2000), pp. 19–26. [Literature review, Model presentation, Advertising turnover, Marketing investment, Product quality, Market share, Study of firms, High- and low-efficiency brand enhancers, Brand deterioration, Future unknown, Neglect, Examples.] 135

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The Impact of Verbal Anchoring on Consumer Response to Image Ads. Barbara J. Phillips, *Journal of Advertising*, 29 (Spring 2000), pp. 15–24. [Literature review, Experiment, Attitude toward the ad, Presence and level of verbal anchoring, Comprehension, Statistical analysis.] 137

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Sales Call Anxiety: Exploring What It Means When Fear Rules a Sales Encounter. Willem Verbeke and Richard P. Bagozzi, *Journal of Marketing*, 64 (July 2000), pp. 88–101. [Literature review, Model testing, Hypotheses, Survey of salespeople, Factors, Negative self-evaluations, Negative evaluations from customers, Physiological symptoms, Protective actions, Statistical analysis, The Netherlands.] 140

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Masterful Meetings. Erin Strout, *Sales and Marketing Management*, (May 2000), pp. 68–72, 74, 76. [Discussion, Planning, Choose destination carefully to set the right tone, Set straightforward agenda, Stick to budget, Develop postmeeting action plans.] 144

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Do Trade-Offs Exist in Operations Strategy? Insights from the Stamping Die Industry. Mark Pagell, Steve Melnyk, and Robert Handfield, *Business Horizons*, 43 (May/June 2000), pp. 69–77. [Study of firms, Performance, Comparisons, Strategic advantages and disadvantages, Relative fixed costs and lead time, Employee commitment, Assessment.] 146

Strategic Selling in the Age of Modules and Systems. John W. Henke, *Industrial Marketing Management*, 29 (May 2000), pp. 271–84. [Discussion, OEM impediments to module and system acquisition, Developing a sales strategy, Capabilities and resources, Cooperation among participating suppliers, Design considerations, Markup practices, Supply chain management experience, Case study, Automotive industry.] 147

Differential Effects of the Primary Forms of Cross Functional Integration on Product Development Cycle Time. J. Daniel Sherman, William E. Souder, and Svenn A. Jenssen, *Journal of Product Innovation Management*, 17 (July 2000), pp. 257–67. [Literature review; Survey of high-technology firms, Variables; Integration of knowledge from past projects; R&D/customer, marketing, manufacturing, supplier integration; Strategic partnership integration; Statistical analysis; US and Scandinavian firms.] 148

Prepping the Supply Base for Leaner Supply Systems. Tom Stundza, *Purchasing*, 128 (June 1, 2000), pp. 62–64, 66, 68. [Supplier development programs, Quality control processes, Material resource planning, Just-in-time delivery, Make or buy studies, Component kitting, Best supplier evaluations, Outsourcing, Improving performance, Implementation, Case study, Aerospace industry.] 149

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Positioned for Success: Branding in the Czech Brewing Industry. Chris Lewis and Angela Vickerstaff, *Journal of Brand Management (UK)*, 7 (May 2000), pp. 341–52. [Literature review, Brand appeals (function, image and personality), Market strategy, Price, Quality, Traditional, Modern, Effects, Foreign ownership and expertise, Case studies.] 154

Country of Branding: A Review and Research Propositions. Ian Phau and Gerard Prendergast, *Journal of Brand Management (UK)*, 7 (May 2000), pp. 366–75. [Literature review, Hypotheses, Quality perceptions, Brand image, Country of branding versus country of manufacturing, Luxury brands, Development of country, High versus low involvement, Assessment, Asia.] 155

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Global Sourcing, Multiple Country-of-Origin Facets, and Consumer Reactions. Zhan G. Li, L. William Murray, and Don Scott, *Journal of Business Research*, 47 (February 2000), pp. 121–33. [Literature review, Hypotheses, Experiment, Comparisons, Country-of-design, Assembly, Corporation, Dimensions (functional, symbolic, overall quality), Statistical analysis, Implications.] 160

New Rules for Global Markets. Richard W. Oliver, *Journal of Business Strategy*, 21 (May/June 2000), pp. 7–9. [Discussion; Competitive strategies; Think and act globally; Focus on ethnic group, not country; Focus on neighbors first; Focus on the cities; Culture is an important barrier; Use global market muscle; Focus south, not east–west; Develop new mind-set.] 161

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The Determinants of Trust in Supplier–Automaker Relationships in the U.S., Japan, and Korea. Jeffrey H. Dyer and Wujin Chu, *Journal of International Business Studies*, 31 (Second Quarter 2000), pp. 259–85 [Literature review, Model presentation, Hypotheses, Personal interviews, Measures, Length of relationship, Face-to-face communication, Relationship continuity, Assistance to supplier, Stock ownership, Statistical analysis.] 163

Social Ties and Foreign Market Entry. Paul Ellis, *Journal of International Business Studies*, 31 (Third Quarter 2000), pp. 443–69. [Literature review, Propositions, Interviews with experienced members of manufacturing firms, Knowledge of foreign market opportunities is commonly acquired through existing interpersonal links rather than through market research, Hong Kong.] 164

Process Standardization Across Intra- and Inter-cultural Relationships. David A. Griffith, Michael Y. Hu, and John K. Ryans Jr., *Journal of International Business Studies*, 31 (Second Quarter 2000), pp. 303–24. [Literature review, Model presentation, Hypotheses, Survey of distributors, Measures, Trust, Commitment, Conflict, Satisfaction, Statistical analysis, Managerial implications, Canada, Chile, Mexico, US.] 165

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National Culture and Strategic Change in Belief Formation. Livia Markoczy, *Journal of International Business Studies*, 31 (Third Quarter 2000), pp 427–42. [Literature review, Study of Hungarian organizations recently acquired by Anglo-Saxon partners, Individual beliefs, Causal relationships, Impacts, Being a member of the functional area favored by the strategic change, Statistical analysis.] 168

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A Case for Comparative Entrepreneurship: Assessing the Relevance of Culture. Anisya S. Thomas and Stephen L. Mueller, *Journal of International Business Studies*, 31 (Second Quarter 2000), pp. 287–301. [Literature review, Survey of students, Measures, Innovativeness, Locus of control, Risk-taking, Energy level, Impacts, Cultural distance, Many countries.] 172

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Book Reviews

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Driving Customer Equity: How Customer Lifetime Value Is Reshaping Corporate Strategy by Roland T. Rust, Valarie Zeithaml, and Katherine N. Lemon (New York: The Free Press, 2000, 292 pp., $28.00, hardback)

A historical review of customer satisfaction and service quality suggests that the literature is entering its third generation. In the first generation (emerging during the 1980s), scholars were concerned mainly with specifying and measuring satisfaction antecedents, and firms were obsessed with maximizing customer satisfaction (at any cost!). During the second generation (early to mid-1990s), the major concern was to link satisfaction to key customer behaviors (e.g., repurchase, word of mouth). The third generation (emerging only recently) seems concerned mainly with how to link satisfaction and service quality to profitability. We might summarize the literature by saying there has been a shift from maximizing satisfaction to maximizing retention to optimizing the bottom line. *Driving Customer Equity* by Rust, Zeithaml, and Lemon represents a major step in articulating and implementing the philosophy of the third generation.

The central thesis of *Driving Customer Equity* is that firms should work to maximize customer equity by addressing its three key drivers: value equity, brand equity, and retention equity. Thus, although the book represents a milestone in the third generation of customer satisfaction and service quality research, it goes beyond that. The customer satisfaction and service approach is really encapsulated in one of the three key equity drivers: value equity. Conceptually, *Driving Customer Equity* expands on the ideas proposed by Rust, Zahorik, and Keiningham (1995), suggesting that every quality-related expenditure should be made financially accountable.

The book argues that a firm should manage its customer equity—the total of the discounted lifetime value of all its customers. This customer equity is made up of three subcomponents: value equity—the customer's objective assessment of the utility of a brand, based on perceptions of what is given up for what is received; brand equity—the customer's subjective and intangible assessment of the brand above and beyond its objectively perceived value; and retention equity—the tendency of the customer to stick with the brand above and beyond the customer's objective and subjective assessments of the brand. Rust, Zeithaml, and Lemon explain why these types of equity are important, how firms can measure them, and how the types of equity can be strategically deployed.

The book argues that firms should move from a brand to a customer equity perspective. The problem with a brand equity perspective as the authors see it is that it is limiting in that it promotes focus on product-level profitability. Rather, they argue, in the context of the new economy, more and more firms are selling services rather than products. This means that the focus is moving away from a transactional and toward a relational approach to customers. Thus, firms are formulating goals aimed at retaining rather than attracting customers, with the result that they now focus on customers per se rather than brands. This argument suggests that the value of a firm lies in the value of its customers rather than in its brands alone. Hence the move toward customer equity.

Rust, Zeithaml, and Lemon develop many points and examples to bolster their arguments. For example, most customers buy an assortment of products from a firm. As the firm successively eliminates unprofitable items from its portfolio, it may also successively alienate profitable customers who become dissatisfied if they do not find the full assortment. If these customers leave, the firm has lost the customer's entire lifetime worth of revenues across all of its products, even though short-term, product-level profitability may be maximized. Similarly, the authors emphasize that calculating lifetime value on the basis of retention probabilities alone may lead to an underestimation, because customers who switch away can also switch back. As such, brand switching patterns over time may be needed to calculate customer lifetime value accurately.

The book discusses the interaction of the three components of customer equity and the shifting relative importance of each across different strategic domains. For example, brand equity may be the dominant concern during customer acquisition, but retention equity comes to the forefront in retaining customers for a mature brand. Therefore, firms are advised to determine the drivers and contextual importance of each type of equity, benchmark its position against competitors, and invest in areas in which the payback to customer equity is highest.

The discussion on the drivers of the various subcomponents of customer equity will be of great interest to academics and managers alike. For example, firms might increase value equity by giving customers more of what they want (e.g., expanded offering) or by reducing what customers do not want (e.g., price reduction). Value equity seems to matter most when products are differentiated, when prepurchase decision making is complex, and in most business-to-business situations. Because the authors propose that value equity itself is driven by factors such as service delivery, service product, physical product, service environment, and so forth, a multiattribute approach to conceptualizing products and services (see Rust, Zahorik, and Keiningham 1995) might prove to be a useful approach to identifying specific value equity drivers.

The book argues that because brand equity building has received so much attention, managers understand it better than value equity or retention equity. The authors argue that brand equity performs the important functions of building awareness and attracting customers, building emotional ties with customers, and reminding customers to repurchase. Specific drivers of brand equity include customers' awareness of a brand, their attitude toward the brand, and their perceptions of brand ethics.

The book's coverage of retention equity includes a discussion of how simple loyalty programs often degenerate into price wars and how firms can avoid the loyalty trap. The authors identify loyalty programs (special discounts to customers who have a loyalty card), special recognition programs (e.g., frequent flyer miles), affinity programs, community programs, and knowledge-building programs as key drivers of retention equity.

The book also discusses implementation issues, including an outline of the market research needed to identify key drivers of customer equity and benchmark the firm's performance on those key drivers. Also included in this discussion is a detailed illustration, drawn from survey data from four different industries (grocery stores, airlines, rental cars, and facial tissue), of how to evaluate the financial impact of each action taken to improve customer equity. Readers who are already familiar with customer satisfaction and service quality–type research will no doubt find this section repetitive.

The authors also argue that variability in customer profitability provides a basis for segmenting and classifying customers into tiers (least profitable to most profitable). Typically, customers in different profit tiers place different weights on the various equity drivers and have different volume and incidence of new business. The profitability impact of improving customer service and satisfaction varies enormously among the tiers. Building on this argument, the authors go on to show how companies can build customer pyramids by classifying customers as platinum (most profitable) through iron (least profitable but still desirable) to lead (unprofitable and undesirable). This implies several practical problems with which managers must deal. For example, managers must fight simply to implement the approach—finding out what customers spend on the company's services, recording and storing costs associated with each customer in the customer information file, developing profiles of different customer tiers, and determining ways to access customers in each tier individually or as a group.

The chapter, "Customer Alchemy," discusses the art of turning less profitable customers into more profitable customers. The central idea in customer alchemy is that firms should drop customers into the lead tier when they are unprofitable and undesirable. Conversely, iron customers can be moved to the gold tier, and gold customers can be moved to the platinum tier. The trick is to identify the specific and unique equity drivers for each customer tier and to fulfill those needs and requirements better.

The book also discusses the role of the Internet in the firm's customer equity strategy. The Internet can be useful, it is argued, in implementing the customer equity approach—for example, in capturing and disseminating customer-level data to calculate profitability, increasing value equity by increasing customer convenience, saving customer's time, providing customers with information, and so forth. Naturally, the role of the Internet is going to be different for different customer tiers.

The authors conclude with an argument that to become truly customer-centered, a traditional firm must be reconfigured. Instead of a functional approach, an equity-based approach to organizing a firm is proposed. Such a firm would have a value equity officer, a brand equity officer, and so forth. The reconfigured firm would need to pay attention to capturing all relevant data needed for the analysis. By implication, the information processing department, accounting department, and so forth would need to go beyond their traditional functional roles.

Managers at customer-oriented firms will find great value in this book. Such managers are often exhorted to be "customer-centric," and their firms are asked to have a customer orientation. What are the costs and benefits of being customer-centric or customer oriented? More important, how can a firm be customer oriented? Should it build better products to offer more value? Should it create brand equity? This book offers a framework to help managers arrive at specific answers to such general questions. Stated differently, the book tackles the important task of illustrating how the customer equity framework can be implemented. The book provides specific examples of the three types of equity and shows how a firm can measure these through surveys. The book clearly outlines how customer equity calculations can be done to assess the profitability impact of marketing actions.

Most books aimed at the practicing manager fall in one of two categories. The first type is typically intended to be inspirational. Such books are filled with vague exhortations and typically rely on isolated case studies to illustrate best-in-class practices. Also, although these sorts of books usually suggest what proper goals are (e.g., be customer oriented, delight the customer, deliver excellent service), they usually fail to provide systematic guidance on how to achieve them. The second type is "how-to-do" books (e.g., conducting a satisfaction survey, producing a balanced scorecard). These types of books are useful as implementation guides only. Rust, Zeithaml, and Lemon have produced a book that is a blend of both approaches and balances the strategic with the tactical. Managers who like the strategic approach advanced in this book do not have to look elsewhere to implement it. The book provides them with the road map.

Academic researchers will also find the book useful, primarily because it integrates current thinking on customer equity. By bringing together areas of satisfaction/quality (value equity), brand management (brand equity), and relationship marketing (retention equity), *Driving Customer*

Equity provides the groundwork for more integrative research.

Academic researchers might best measure *Driving Customer Equity*'s contribution not simply by asking, "Does it answer any questions?" but rather by asking, "Does it raise new and interesting questions?" Indeed, the book raises several questions that should claim the attention of the research community. For example,

- Which factors (industry-, firm-, and customer-related) determine the relative importance of equity drives? The authors find that the importance varies for the industries investigated. However, a more theoretical understanding is needed. The level of product/service differentiation, the nature of competition in an industry, and the life cycle stage of an industry are a few among the many factors in need of research. Cultural factors may also come into play, because the importance of each equity driver varies systematically with cultures.
- How is customer equity related to other measures of firm value? How do these linkages vary across industries and which factors explain variation in the links?
- How do the dynamics of customer equity work? For example, a customer life cycle approach could be developed to model customer lifetime value and customer equity.
- In the context of the new economy, what are the mediators and moderators of the various equity relationships? Similarly, it is important to understand the interactive effect of the three types of equity drivers.

Is this a good book, and should marketers spend their time reading it? My recommendation? Yes and yes! The book's style is direct and simple; its illustrative style ensures that abstract concepts are made clear by the examples provided. Thankfully, this is one of those books that illuminates rather than inundates.

A few caveats. My sense is that in most firms it is still difficult to implement the customer equity approach because of the lack of data availability and integration. Specifically, implementing this approach involves merging survey data with operational data and internal metrics. Even in this day and age of information technology, many firms are unable to produce such integrated databases. Reasons for this may include functional and departmental turf battles, database incompatibilities, and top management's wanting proof that the customer equity approach works before it spends resources on data integration (the chicken-and-egg problem). The book will have served a valuable purpose if it can convince managers of the importance, viability, and applicability of the approach.

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This year two articles were selected to receive the Harold H. Maynard Award. Amna Kirmani and Akshay R. Rao have been selected as recipients of the Harold H. Maynard Award for their article, "No Pain, No Gain: A Critical Review of the Literature on Signaling Unobservable Product Quality," which appeared in the April 2000 issue of the *Journal of Marketing*. Rajesh K. Chandy and Gerard J. Tellis have also been selected as recipients of the Harold H. Maynard Award for their article, "The Incumbent's Curse? Incumbency, Size, and Radical Product Innovation," which appeared in the July 2000 issue of the *Journal of Marketing*. These two articles were chosen by members of the *Journal of Marketing* Editorial Review Board for their significant contribution to marketing theory and thought. The award consists of a plaque and a cash prize, both of which are presented at the American Marketing Association's Summer Marketing Educators' Conference scheduled for August 11–14, 2001, in Washington, D.C., at the Washington Hilton and Towers.

- Amna Kirmani is Assistant Professor of Marketing, Southern Methodist University
- Akshay R. Rao is Associate Professor of Marketing, University of Minnesota
- Rajesh K. Chandy is Assistant Professor of Marketing, University of Minnesota
- Gerard J. Tellis holds the Jerry and Nancy Neely Endowed Chair in American Enterprise, University of Southern California

MARKETING SCIENCE INSTITUTE/H. PAUL ROOT AWARD

Lee G. Cooper has been selected as the recipient of the MSI/H. Paul Root Award for his article, "Strategic Marketing Planning for Radically New Products," which was published in the January 2000 issue of the *Journal of Marketing*. This article was chosen by the members of the *Journal of Marketing* Editorial Review Board for its significant contribution to the advancement of the practice of marketing. The award consists of a certificate and a cash prize, both of which are presented at the American Marketing Association's Summer Marketing Educators' Conference scheduled for August 11–14, 2001, in Washington, D.C., at the Washington Hilton and Towers.

- Lee G. Cooper is Professor of Marketing, University of California, Los Angeles

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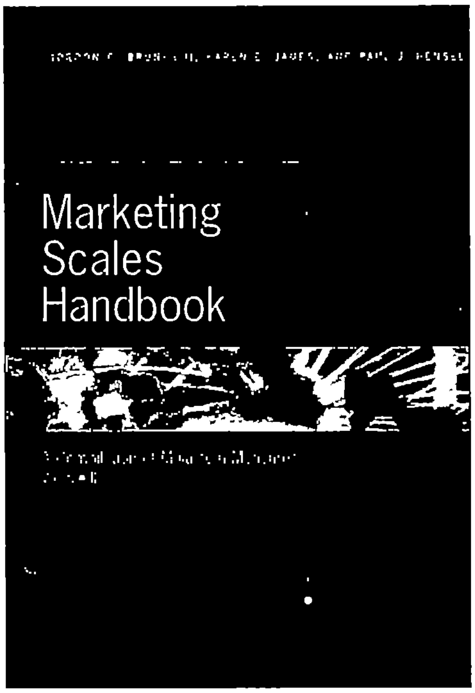
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Rakesh Niraj, Mahendra Gupta, & Chakravarthi Narasimhan

Customer Profitability in a Supply Chain

Estimating current profitability at the individual customer level is important to distinguish the more profitable customers from the less profitable ones. This is also a first step in developing estimates of customers' lifetime values. This exercise, however, takes on additional complexities when applied to an intermediary in a supply chain, such as a distributor, because the costs of servicing a retail customer include not only those incurred directly in servicing this customer but also those incurred by the distributor in dealing with its own vendors for goods supplied to this customer. The authors develop a general model and measurement methodology to relate customer profitability to customer characteristics in a supply chain. The authors show how heterogeneity in customer purchasing characteristics leads to important profit implications and illustrate the implementation of the methodology using data from a large distributor that supplies to grocery and other retail businesses.

In recent years, marketing practitioners and academicians alike have embraced such concepts as one-to-one marketing, relationship marketing, targeted marketing, interactive marketing, and so on and have increasingly talked about the importance of building relationships with customers. The basic premise behind these concepts is that if a firm can address and target individual customers, it can improve its profitability by serving these customers differently. Several authors have advanced conceptual frameworks and have argued that targeted marketing, or marketing different programs to different customers, is a winning strategy. Popular books by Peppers and Rogers (1993) and Hallberg (1995) stressing customer heterogeneity are prime examples. This emphasis on relationship has given a new meaning to the age-old marketing concept of being customer driven, especially as the falling cost and increasing capabilities of information technology make it possible for more and more firms to practice targeted marketing. However, to be customer driven under this new paradigm, firms increasingly need—and should develop the capability—to evaluate profitability at the customer level to formulate their marketing strategies better. In this article, we develop a model of single-period customer profitability in the context of a supply chain. Applying the model to data from a large wholesaler/distributor, we demonstrate that individual customer purchasing behavior affects not only customer revenues but also customer service costs and profits.

In the marketing literature, attempts to build customer profitability models have usually been in a direct marketing context (e.g., Berger and Nasr 1998; Mulhern 1999), in which customer profitability is evaluated solely on the transactions between the direct marketer and the customer. The focus of these studies has been primarily on direct marketing costs such as direct mailing costs, promotions, free samples, and so forth. In a supply chain, firms deal with customers, supplying products and services to them, and with vendors, acquiring products and services from them. The logistic and operation costs of buying, storing, and selling are typically as important as, if not more important than, direct marketing costs. We show that explicitly recognizing all these types of transactions from the perspective of an intermediary in a supply chain raises several interesting issues in modeling customer profitability as well as in the managerial uses of such a model.

There are several dimensions of differences between direct marketing and supply chain contexts of customer profitability models. First, the purchasing, carrying, and shipment costs borne by the distributor generally vary across different products in a typical supply chain. Second, customer characteristics such as size, decentralization of purchasing, inventory holding and reorder policy, number of delivery locations, payment habits, and so forth have a significant effect on customer servicing costs. Third, the execution of orders and related costs are different depending on the type and size of order (i.e., normal or direct delivery [DD] shipment) in the supply chain. In summary, the costs of purchasing, inventory, order processing, delivery, and services are important and vary widely across customers in most supply chains, but these are usually not recognized in more traditional (i.e., direct marketing) contexts. In this article, we build a detailed activity-based cost model to understand the behavior of costs and profits associated with individual customers in a supply chain.

In Figure 1, we sketch the flow of products and orders from the perspective of an intermediary in a supply chain for a typical packaged consumer good. The intermediary we focus on is a distributor in this chain (e.g., A in Figure 1) selling to other downstream intermediary firms (e.g., B or C in Figure 1, which are customers of A). Sales are made to the

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Rakesh Niraj is a doctoral candidate in marketing, Mahendra Gupta is Associate Professor of Accounting, and Chakravarthi Narasimhan is Philip L. Siteman Professor of Marketing, John M. Olin School of Business, Washington University in St. Louis. The authors thank the three anonymous *JM* reviewers for their comments and suggestions on previous versions of the article. Workshop participants at the National Chengchi University, Taiwan; the Management Accounting Conference (2000) in Mesa, AZ; and the Marketing Science Institute Conference on Managing Customer Relationships (2000) in Charleston, SC, also provided useful feedback. The authors also thank Lynnea Brumbaugh for help in editing the manuscript. A previous version of this article appeared as Report No. 99-125 in the Marketing Science Institute's Working Paper Series.

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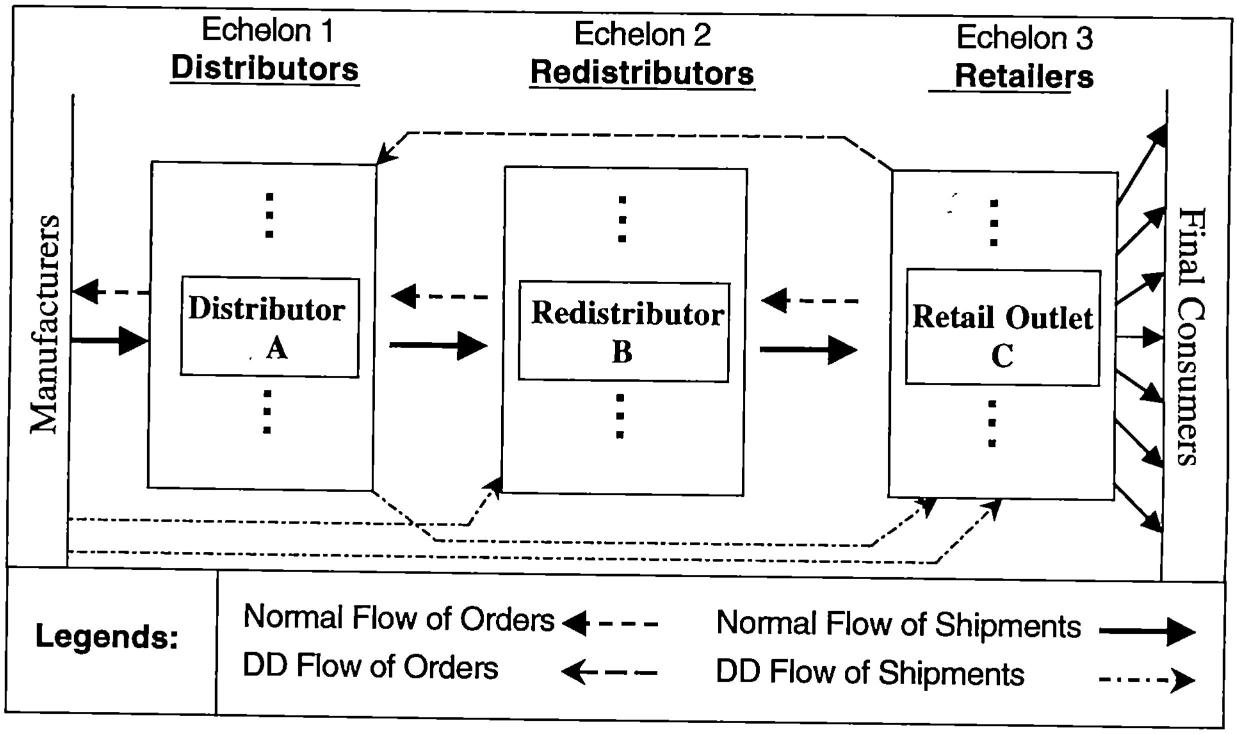
Vol. 65 (July 2001), 1–16

FIGURE 1
Transaction Flows in a Multiechelon Supply Chain



Notes: In a three-echelon supply chain, we focus on customer profitability of the distributor, A. Its customers may be redistributors such as B or retail outlets such as C. In a normal delivery shipment, the distributor ships goods to its customers. Sometimes, a DD shipment may be arranged by Firm A, in which case, a manufacturer ships goods directly to Firm A's customers.

customers and purchases are made from upstream suppliers (manufacturers in Figure 1). Products are delivered to Customers B or C either by Distributor A (termed normal shipment) or directly by an upstream supplier (termed DD shipment). Using activity-based costing (ABC) methodology (Kaplan and Cooper 1997), we develop cost pools and identify cost drivers for the flow of orders and products related to Distributor A.[1] We then combine a general revenue model with a general cost model to arrive at a profitability model at the individual customer level for the distributor. We analyze the impact of customer purchasing characteristics on service costs and subsequently on the profitability of Distributor A's customers in the supply chain.

Not surprisingly, we find evidence that all customer dollars are not equal in their effect on the firm's net profits. Although sales volume remains an important indicator of profitability, differences in the cost of serving different customers play an equally important role in determining which customer is profitable and which is not. We find that many customers (32% of total) in our data, including some of the largest customers, are unprofitable. Our results also suggest that new distribution practices such as efficient consumer response (ECR; Kurt Salmon Associates Inc. 1993) could affect service costs and their distribution to various channel members in such a way that many profitable customers of a distributor may become unprofitable.

Our contributions to the marketing literature are the following: We integrate the customer profitability literature in marketing with the latest developments in management accounting and develop a customer profitability model that includes a carefully developed cost model using ABC analysis. We do this in the context of a supply chain, taking into account both direct costs (those affected by customer behavior) and indirect costs (those incurred as a result of customers affecting the firm's pattern of interaction with its own suppliers). We also provide a blueprint for implementing customer profitability analysis in an important distribution channel setting that is prevalent in many industries. This blueprint could be adapted to a variety of business-to-business situations. We provide evidence of relationships among customer transaction characteristics and revenue, components of service cost, and measures of profitability. We also discuss the implications of our customer profitability model and findings for marketing strategies such as customer selection, menu-based pricing, and evaluating business practices. Finally, we discuss the managerial and broader business policy implications of more and more firms obtaining the capability of ascertaining the profitability at the individual customer level.

The remainder of the article is organized as follows: In the next section, we present a brief review of the literature and position our article therein. Following this, we describe interactions in multiechelon supply chains and then build a model of customer profitability. In the following section, we present the research site and illustrate the process of implementing our conceptual model. We then present both our analysis of factors that affect customer profitability and our empirical testing of the relationships posited previously. We conclude with implications, limitations, and a brief discussion of the future research directions.

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[1] Horngren, Foster, and Datar (1997, pp. 28, 991) define a cost driver as "any factor that affects total costs." Therefore, a change in the value of a cost driver for an activity and/or customer will cause a change in the level of the total cost of that activity and/or customer.

Background

Blattberg and Deighton (1996) suggest that in this customer-centric era, firms should focus on building and managing customer equity and not just brand equity. Customer equity is the sum of lifetime values (LTVs) of customers, where each customer's LTV is the sum of the properly discounted stream of net profits from the customer over the lifetime of the customer–firm relationship. When each customer's LTV can be computed, interesting possibilities open up. The firm can identify its best prospects and target the most profitable ones differently from the less profitable ones. Marketing, service, and other strategies aimed at customer acquisition or retention can be reevaluated on the basis of which strategy yields the richest pool of customers with high potential LTVs.

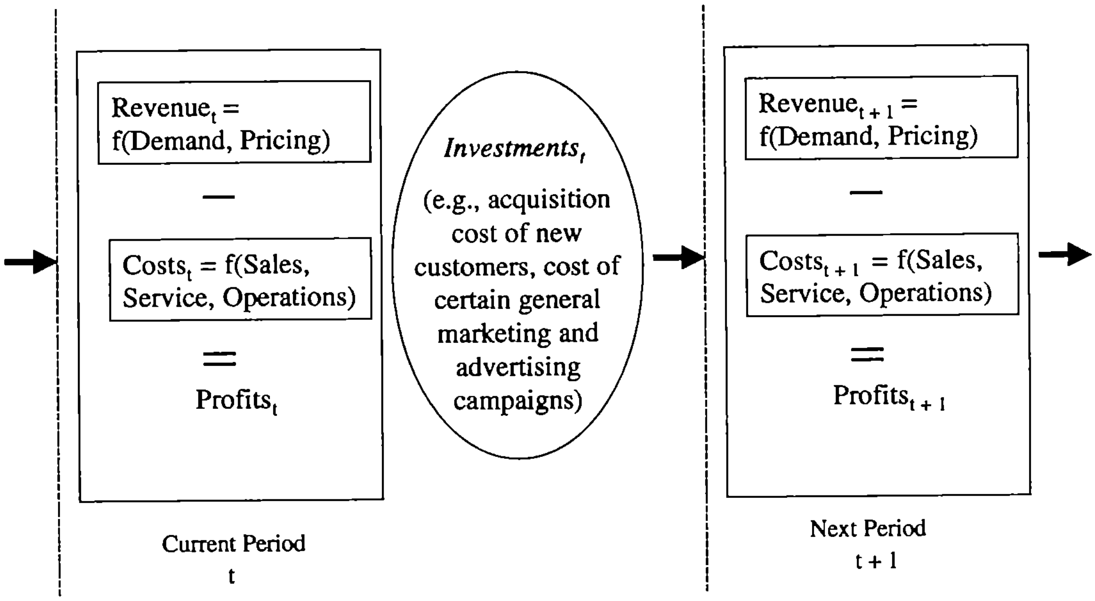
Customers generally interact with a firm over multiple periods. Figure 2 (adapted from Wayland and Cole 1997) illustrates that to calculate the LTV of a customer, models of current period costs and revenues as well as future revenues and costs are required. We believe and subsequently illustrate that obtaining the current period costs and revenues at the customer level is not always straightforward. It is even more complex to estimate future revenues and costs, because metrics and models would be needed to help forecast how customers' current revenue streams and associated costs will evolve in the future in addition to forecasting how long these relationships are likely to last. We provide a description of the two streams of literature related to the LTV concept next.

Customer Profitability Models

The issue of customer profitability has attracted interest in both the management accounting and marketing literature. With the advent of activity-based costing in the 1990s, management accounting researchers have been interested in understanding the processes and factors that drive customer service costs and profitability and using this information for better management and control of customer services and related operations (Shields 1997). More recently, customer profitability measures have been used to investigate the impact of nonfinancial performance measures, such as customer satisfaction, on financial performance measures, such as revenues and customer profits (Foster and Gupta 1999) and firm value (Ittner and Larcker 1998).

In the marketing literature, Berger and Nasr (1998) advance a series of models along with numerical examples that illustrate how to compute LTV in some typical situations. They focus on providing a "systematic theoretical taxonomy" of such models. However, they do not provide any empirical application of their customer profitability models, nor do they consider multiple dimensions of consumer heterogeneity. Using data from the pharmaceuticals industry, Mulhern (1999) provides an application for evaluating current customer profitability as an input to computing LTV. Our work, though similar in spirit, is different from his in important ways. First, Mulhern's model is set in a specialized, direct-marketing–like context, whereas ours is set in a supply chain context. As explained previously, modeling the profitability of a customer in a supply chain involves

FIGURE 2
Customer Profitability Models and Customer LTV


Revenue$_t$ =
f(Demand, Pricing)
—
Costs$_t$ = f(Sales, Service, Operations)
=
Profits$_t$
Investments$_t$
(e.g., acquisition cost of new customers, cost of certain general marketing and advertising campaigns)
Revenue$_{t+1}$ =
f(Demand, Pricing)
—
Costs$_{t+1}$ = f(Sales, Service, Operations)
=
Profits$_{t+1}$
Current Period
t
Next Period
t + 1

Notes: Adapted from Wayland and Cole 1997.

carefully accounting for both upstream and downstream costs in the supply chain. Second, Mulhern's main focus is on showing heterogeneity in the effectiveness of a marketing program (what he calls "concentration"), whereas we focus on heterogeneity in customer characteristics in evaluating customer profitability. Finally, a major difference between Mulhern's study and ours lies in the details of revenue and costs we each consider. On the revenue side, Mulhern implicitly assumes constant gross margins by treating revenues from all products and all customers as having the same impact on the "top line." In contrast, we allow for the possibility of different gross margins across customers due to product as well as price differences (including price discounts). On the cost side, Mulhern considers only direct marketing costs such as salespeople's time, free samples, and direct mail expenditure. In contrast, we include not only the marketing costs but also the operations costs associated with servicing the customers. In addition, we take into account the indirect upstream costs induced by customers in the firm's dealings with its own suppliers.

Forecasting Models

In the marketing literature, stochastic choice models have been advanced to predict the likelihood of future events based on past history. These models can be used to identify the likelihood of current customers being active in the future and to predict future revenue. Schmittlein, Morrison, and Colombo (1987) propose a purchase event–duration model to predict the probability that a customer will remain active and use this model to predict the future level of transactions. Schmittlein and Peterson (1994) apply the framework developed by Schmittlein, Morrison, and Colombo to an industrial purchasing context and extend it by incorporating the dollar volume of transactions in the forecasting model. Schmittlein and Peterson's model can answer questions such as how likely a customer is to be active, how much longer he or she is likely to continue being active, and how much he or she is expected to purchase. Reinartz and Kumar (1999) also build on Schmittlein, Morrison, and Colombo's methodology and, using data from a direct marketing context, forecast customer lifetime duration for noncontractual customer–firm relationships. They also provide an analysis of factors that affect the likelihood of a continued relationship using a proportional hazard model. This stream of articles provides us with methodologies and illustrations to forecast the future revenue potential of a customer (i.e., Period [t + 1] and beyond in Figure 2).

Forecasting the profit streams for customers' lifetime duration will be difficult if revenue or cost components cannot be correctly identified or measured even at their current levels. Also, different revenue and cost elements often interact with one another, and their future values can be affected differently by the firm's actions (e.g., adoption of new technology, targeted advertising and promotional policies). We believe that carefully identifying and quantifying the components of the revenues and costs for a given period will improve the forecasting of these elements over future periods or over the lifetime of customers. Our focus in this article is to advance a model to measure the current-period profitability of a customer.

Customer Profitability Model

In this section, we first describe the activities in a multiechelon supply chain, and then we develop a general model of current period customer profitability. Finally, we discuss how customer characteristics affect customer profitability.

Activities of the Firms in a Supply Chain

To construct a model of current-period customer profitability for a firm that operates in a multiechelon supply chain, we start by describing the general supply chain shown in Figure 1. Three generic echelons of firms are included in Figure 1. Our focus in developing the model is a distributor such as A in Figure 1. The model can be generalized to any other intermediary firm in a supply chain with any number of echelons. Although each echelon may consist of several (indeed, hundreds of) firms, in Figure 1, we show only the focal distributor among the distributors and representatives of other firms in the supply chain, provided that they have some buying or selling relationship with the distributor. Also, although each echelon may consist of many distinct firms, it is possible for a firm to own facilities in multiple echelons; for example, a firm may own a redistribution facility to serve several of its own retail outlets exclusively. We conceptualize the supply chain interactions as consisting of two flows, the flow of orders and the flow of physical goods to fulfill these orders. As retail outlets such as C deplete their stocks by selling to final consumers, they initiate the ordering process. In general, these outlets place orders to a redistributor such as B (which may be owned by the retailers themselves), which in turn places orders to the distributor. The flows involving two firms in two adjacent echelons of the supply chain are termed "normal" in the model. However, in search of logistic efficiencies, it is not uncommon for firms to bypass one or more echelons in the supply chain. This is indicated in the figure as DD orders or shipments. For example, a retail outlet, C, may place orders directly to the distributor. Our model includes both normal and DD transactions insofar as Distributor A gets involved in at least one of the flows. The orders may be consolidated (across items and/or customers) at each level and passed on to a higher level in the supply chain. The physical flow virtually mirrors the flow of orders, except in certain DD shipments in which a shipment might skip one or more echelons and be sent directly to a customer's customer.

The activities involved in maintaining the two flows are sustained by certain support activities. These include warehousing, accounting, and administrative services such as those associated with selecting vendors, matching physical flows with orders, performing routine customer maintenance services, and so on. Finally, firms in each echelon also engage in varying degrees of marketing and sales activities.

Assigning Costs to Customers

In building a detailed customer-specific cost model based on the principles of ABC, we must determine the portion of the distributor's activities that are attributable to its individual customers. For each customer, these levels of activities are multiplied by appropriate cost rates and then summed over all activities to arrive at the customer-level transaction or service costs. Activity levels are measured in terms of cost drivers. A cost rate is the cost of effort or resources needed to meet the demand of a specific activity (e.g., order processing) measured for the associated cost driver (e.g., purchase order). To construct the cost model for the distributor, we start by briefly describing the set of activities for period t; in doing so, we use the following notations. In the model building, we focus on only one period, and therefore the subscript for period t is dropped for simplicity in the subsequent discussions:[2]

I = number of customers indexed by i;
S = total number of items handled by the distributor, indexed by s;
N_i = number of retail outlets for Customer i;
m_{is} = demand in number of units for Item s for each of the retail outlets of Customer i;
k_i = number of orders placed by Customer i;
D_i = number of delivery locations for Customer i;
S_{iN} = the set of items Customer i receives as normal shipment from the distributor, A;
S_{iD} = the set of items Customer i receives as DD shipment from A's suppliers;
S_{iT} = the set of all items bought by Customer i through the distributor;
P_{is} = net price per unit charged to Customer i for Item s;
k_s = number of orders placed by the distributor for Item s on its supplier;
β_s = fraction of total normal demand the distributor maintains as inventory for Item s;
C_s = cost of Item s to the distributor; and
Vol_s = physical volume per unit of Item s (e.g., in cubic feet).

Sales and direct marketing costs. The field sales force of the distributor spends time and other resources to carry out routine customer visits, generate and take orders, resolve order discrepancies, and so forth. All these are recurring tasks that are necessary to sustain the current business of the firm. Costs incurred in generating new accounts are not included here. The sales force's time allocation to customers is modeled as a function of the customer's size (total revenue) and the complexity of transactions (e.g., number of delivery locations, number of different items, order frequency). Let SF_1 through SF_4 be the cost rates corresponding to each unit of these cost drivers—revenue, delivery locations, number of items, and order frequency, respectively. Allocation of these costs to Customer i can then be expressed as

$$(1) \qquad SF_1 \times \sum_{s \in S_{iT}} P_{is} \times m_{is} \times N_i + SF_2 \times D_i + SF_3 \times S_{iT} + SF_4 \times k_i.$$

Order processing and order fulfillment costs. To compute the costs for *processing orders received from customers,* assume that Customer i raises k_i purchase orders to the distributor in the period. Let the cost rate per purchase order be OR. Therefore, the order processing cost attributable to Customer i is given by

$$(2) \qquad OR \times k_i.$$

The distributor also incurs costs for *shipping orders to customers and accounts receivable.* The total k_i customer orders translate into k_i normal shipments made to Customer i in a period. Let HS_1 be the transaction-level handling cost rate corresponding to activities such as locating the order, scanning the items, checking for accuracy, and so forth. Furthermore, let HS_2 be the unit-level handling cost rate, representing activities such as moving and loading ordered units. In addition, there are paperwork costs (e.g., accounts receivable, shipment papers) for each order. We denote this order-processing paperwork cost rate by AR. Another order-processing cost is incurred when the distributor fills a part of a customer's order by arranging a DD shipment directly from its suppliers to the customer. If this order-processing paperwork cost rate is denoted by DR, the expression for this portion of the transaction costs is

$$(3) \qquad HS_1 \times k_i + HS_2 \times \sum_{s \in S_{iN}} m_{is} \times N_i + AR \times k_i + DR \times \sum_{s \in S_{iD}} k_i.$$

Purchase and warehousing costs. Costs for *vendor maintenance* arise because the distributor must maintain suppliers for all the items it sells. For each item, it incurs costs for identifying suppliers, negotiating rates for the items, and maintaining supplier accounts. We denote the vendor maintenance cost rate per item by VM. Each customer i is allocated a share of this item-specific cost in proportion to its unit share for the item. This is given by the following expression:

$$(4) \qquad VM \times \left[\sum_{s \in S_{iT}} \frac{m_{is} \times N_i}{\sum_{i=1}^{I} (m_{is} \times N_i)} \right].$$

Raising purchase orders to suppliers is another cost to the distributor. It purchases items from its suppliers (manufacturers) on the basis of a consolidated pattern of its customers' purchase orders. We assume that there is an item-specific order frequency (k_s) for normal orders, that is, orders that the distributor places to its suppliers for delivery to its own warehouse. Let OI be the cost rate for each purchase order. A share of purchasing costs for normal orders is allocated to the customer in proportion to its unit share of the normally shipped units of the item. Also note that each item being filled as DD shipment results in a separate order being placed to the relevant supplier for delivery to the relevant customer. Combining these two components, purchasing costs allocated to Customer i are given as

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[2] Additional detailed descriptions of the cost-allocation expressions are available from the authors in a separate appendix.

$$(5) \qquad OI \times \left[\sum_{s:s \in S_{iN}} k_s \frac{m_{is} \times N_i}{\sum_{i=1}^{I} (m_{is} \times N_i)} + \sum_{s:s \in S_{iD}} k_i \right].$$

The distributor incurs costs for *receiving shipments from manufacturers and accounts payable.* Goods supplied through normal orders are received and stored at the distributor's warehouse first and then shipped at the customers' demand. Let HR_1 be the transaction-level handling cost rate for activities such as receiving the order and checking for accuracy. Furthermore, let HR_2 be the unit-level handling cost rate, incorporating activities such as physically moving and unloading items. In addition, each shipment received by the distributor (for normal shipments) or directly by its customers (for DD shipments) generates paperwork costs (e.g., accounts payable) at the rate of, say, AP per shipment. Allocation of these costs to individual customers again is made in proportion to the customer's unit share of relevant items as follows:

$$(6) \qquad HR_1 \times \left(\sum_{s:s \in S_{iN}} k_s \frac{m_{is} \times N_i}{\sum_{i=1}^{I} m_{is} \times N_i} \right) + HR_2 \times \sum_{s:s \in S_{iN}} m_{is} \times N_i + AP \times \left(\sum_{s:s \in S_{iN}} k_s \frac{m_{is} \times N_i}{\sum_{i=1}^{I} m_{is} \times N_i} + \sum_{s:s \in S_{iD}} k_i \right).$$

To compute *warehousing space and capital cost,* let ST be the per-unit volume cost of space and let HO be the cost of working capital per dollar of inventory for the distributor. Letting β_s be the average inventory fraction for Item s, the expression for Customer i's share of warehousing cost comes to

$$(7) \qquad ST \times \sum_{s:s \in S_{iN}} Vol_s \times \beta_s \times m_{is} \times N_i + HO \times \sum_{s:s \in S_{iN}} C_s \times \beta s \times m_{is} \times N_i.$$

These cost components together result in the current-period service cost for Customer i of the distributor. Therefore, we define the customer service costs for Customer i as

$$(8) \qquad CSC_i = \sum \text{Equations (1) to (7).}$$

Investments. Each period, the distributor also incurs costs that have long-term implications, such as new customer acquisition costs and the cost of certain advertising and other marketing activities aimed at building the brand name or awareness among current and future consumers. Because long-term costs are essentially investments and cannot be attributed to a single-period cost or profit of a customer, they are excluded from our single-period profitability model and subsequent empirical analysis. To the extent that these long-term costs also provide current-period benefits, our model underestimates customer-specific service costs and overestimates profitability for the period.

Current Profitability of Customers

To complete the customer profitability model, we need to specify the total revenue and cost of goods sold components at the individual customer level. Total revenue from Customer i for a period is given by

$$(9) \qquad TR_i = \sum_{s:s \in S_{iT}} P_{is} \times m_{is} \times N_i.$$

In this general formulation for revenue, the price (net of discounts or premia) for the same item is allowed to differ across customers. Discounts/premia include any volume discounts, credit discounts, special charges, and special markdowns.

The cost of the goods sold for Customer i is given by

$$(10) \qquad CGS_i = \sum_{s:s \in S_{iT}} C_{is} \times m_{is} \times N_i.$$

Equation 9 minus Equation 10 is the gross profit for the distributor from Customer i:

$$(11) \qquad GP_i = TR_i - CGS_i.$$

Explicitly incorporating various upstream and downstream transaction costs, as discussed in the previous subsection in computing customer profits, we now can express the current-period profits for Customer i as

$$(12) \qquad CP_i = GP_i - CSC_i.$$

Customer service costs and therefore profitability of customers differ in a complicated manner depending on characteristics such as order frequency, number of items, volume and degree of customization of purchase mix, and so forth. In general, customer service costs will neither be the same across customers nor be merely proportional to units sold or to sales revenue. To put customer profitability in the context of the overall LTV model, we can express the LTV of Customer i as

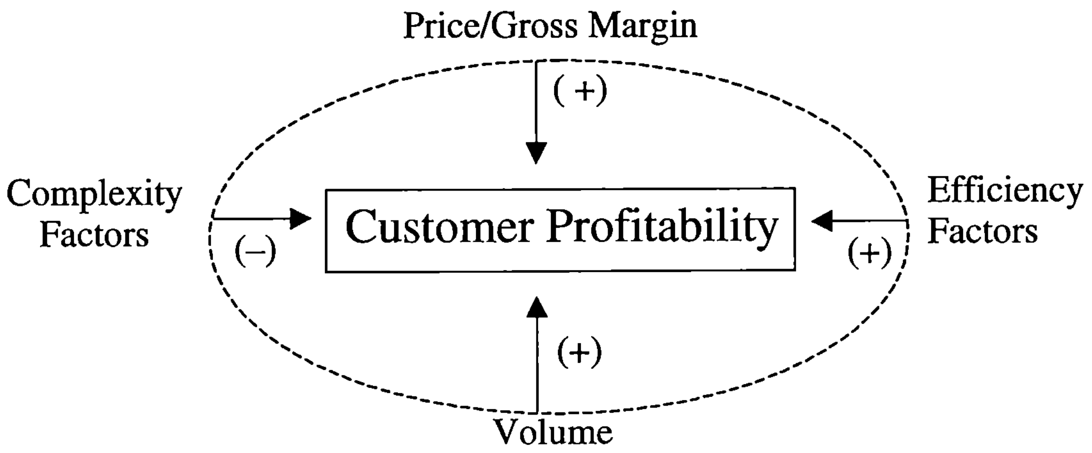
$$(13) \qquad LTV_i = \sum_{t=0}^{T} \frac{CP_{it}}{(1+r)^t} - \text{present value of investments made for Customer i,}$$

where r is the discount rate, CP_{it} is the customer profits associated with Customer i for Period t, and T is the relevant time horizon.

Trade-Offs and Interaction Among Customer Characteristics

Various factors influencing the customer profitability in our model can be categorized as volume, price/gross margin, complexity factors, and efficiency factors (see Figure 3). We discuss these factors next.

FIGURE 3
Factors Influencing Customer Profitability



Volume. As mentioned in our model, some costs vary with unit volumes, others vary with transactions (e.g., number of shipments), and yet others vary with transaction entity (e.g., customer or supplier). Transaction- or entity-level costs do not vary directly with volume; however, ceteris paribus, higher volume implies spreading these costs over more units. Therefore, customer sales volume usually has a positive association with total service costs as well as with customer profit margins.

Price/gross margins. Our revenue expression in Equation 9 allows for different prices to be charged for the same item to different customers. A common reason for this price differential is the traditional practice of offering volume-based discounts, which results in a lower gross margin for high volume customers. Firms may also try to compensate for high service costs imposed by certain customers by charging a higher price to them than to other customers. To the extent that price differentials successfully adjust for service cost differentials across customers, gross margins are likely to be positively (negatively) associated with factors that increase (decrease) service costs. Finally, price differentials may be offered for competitive reasons, long-term growth prospects, and so forth. Analysis of such strategic pricing schemes is beyond the scope of this article. Product mix also plays a role in determining customer-level gross margins, because certain items may inherently command a higher gross margin than others. Overall, higher gross margins are expected to be positively related to customer profits but may be moderated by higher service costs.

Complexity factors. Complexity factors refer to customer characteristics other than sales volume (e.g., number of orders, number of items, degree of product mix customization, number of delivery locations) that drive resources to fulfill customers' orders. Ceteris paribus, these complexity factors are expected to result in higher customer service costs and lower customer profits.

Efficiency factors. Efficiency factors refer to customer-specific factors that lead to cost savings, such as a larger proportion of orders filled as DD shipments from manufacturers. Recall that each DD shipment may require more effort in terms of order processing and paperwork but less physical handling and storage, because the goods need not come to the distributor's warehouse. Quite opposite to high complexity factors, a higher level of efficiency factors is expected to generate lower customer service costs and higher customer profits.

In addition to the direct effects of these four factors on customer profitability, there are indirect effects due to interactions among these characteristics. For example, higher volume generates scale economies but also may result in higher price discounts. Higher complexity factors increase costs but may also provide opportunities for premium pricing. We provide a more extended discussion of such interactions in our empirical analysis.

Data and Implementation of the Customer Profitability Model

In this section, we apply the general customer profitability model developed previously to the data from our field site. The data for our empirical study were made available by a wholesaler/distributor (name withheld for confidentiality) with more than 50 distribution centers that supply to several thousand grocery and other retailer customers nationwide. The data pertain to one of its regional distribution center operations. Each distribution center is a decentralized unit responsible for its purchase and selling operations and associated costs and profits. Our research site buys from hundreds of suppliers and serves more than 650 customers of various sizes scattered throughout a multistate region surrounding the warehouse. The activities and issues of this site are broadly representative of the supply chain interactions of many packaged consumer goods distributors.

We use monthly transaction data that contain the distributor's purchasing, selling, and warehousing activities for a period of one year. Our customer profitability model allocates all costs associated with these activities to customers each period. Discussions with management determined that no unused capacities existed at our site; therefore, we chose to allocate all local costs, except the allocated head office costs, to customers, because all of these costs are spent each period to serve the existing customers. We did not include any one-time-only costs, such as customer acquisition costs, because (1) data on these costs were not available and (2) these costs provide benefits over the lifetime of customer and not merely in the current period. We also did not include any corporate-level overhead and general marketing and advertising costs, because these cannot be associated with individual customers. The costs of relevant activities or cost pools were obtained from the company's internal accounting documents. Extensive interviews with activity managers and facility managers were used to establish the validity and accuracy of cost rates. Finally, the allocated costs were reconciled with the overall accounting statements of the distributor. The supplier- and customer-specific activity information was obtained from data files detailing the distributor's purchase and sales activities. We used information from these complementary sources to identify revenues and costs to be allocated to each customer, according to the model detailed in the previous section, for a period of 12 months. A schematic describing the process of arriving at customer profitability from the information sources is given in Figure 4.

Distribution statistics for the 6764 different items the distributor purchases and sells are presented in Part A of Table 1. There is substantial heterogeneity in quantities, the number of purchases, and the average size of purchase orders across items (stockkeeping units [SKUs]), resulting in wide variations in the per-unit rates for the upstream supply chain costs (purchasing and warehousing). Upstream costs vary from $.005 to $102 per unit, with a median of $1.77 across SKUs. These large differences in upstream cost per item unit also translate into wide variations in upstream costs for individual customers. This can be seen from Part C in Table 1, in which purchasing and warehousing costs vary between .56% and 241% of sales dollars across customers, with a mean of 2.62%.

In Parts B and C of Table 1, we present a descriptive profile of the distributor's customer base. In Part B, we present the mean, the median, and the range for some of the customer characteristics used in our profitability model. There is substantial heterogeneity among customers along each of these characteristics. For example, the number of items ordered varies between 1 and 1652, and the dollar value per order varies between $2.5 and $7,945. Part C of the table provides the distribution of a revenue dollar across various cost and profitability measures. As a percentage of total sales revenue, purchase and warehousing costs total approximately 2.62%, order fulfillment and other sales-end costs total another 2.23%, and sales and direct marketing costs add up to approximately 2.52%. Individually and together (approximately 7.37%), these three components of service costs are substantial relative to the net profit margin of approximately 8.46% for the distributor. At the individual customer level, the service costs vary from 3.6% to 306.5% of revenues, and customer profitability varies from –251.7% to 59.6% of sales revenue. In addition to the distribution for the entire cus-

FIGURE 4
Linking Information Sources to Arrive at Customer Profitability

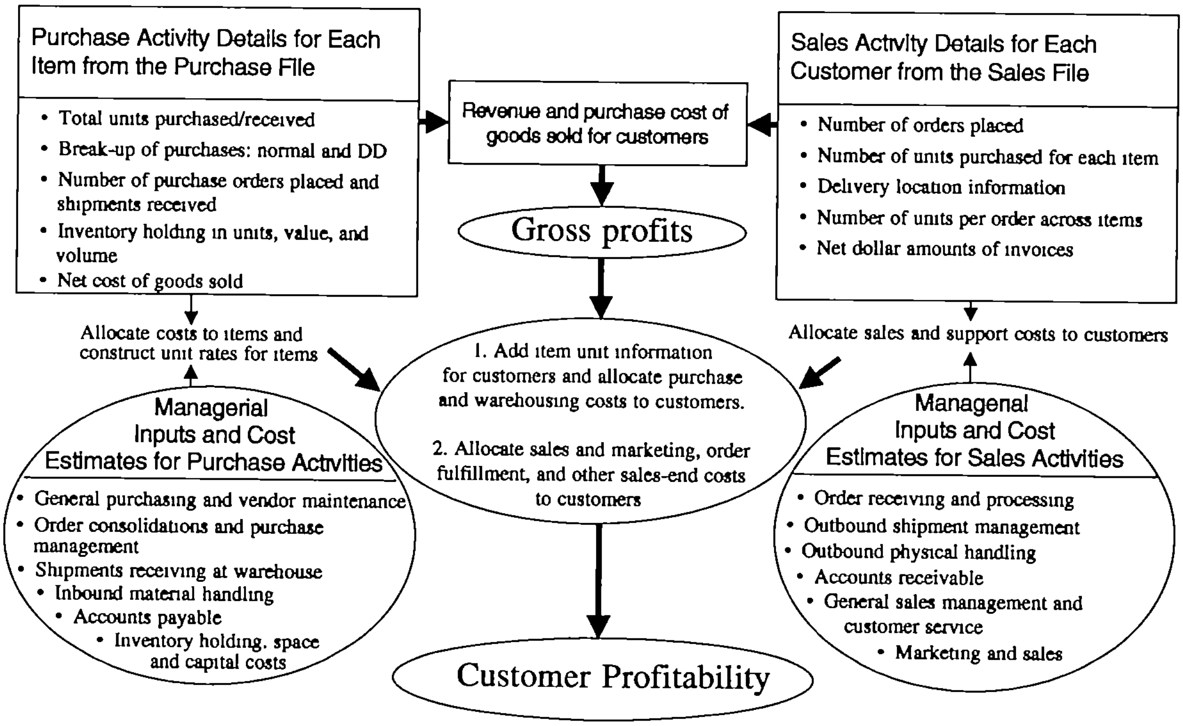

Purchase Activity Details for Each Item from the Purchase File
• Total units purchased/received
• Break-up of purchases: normal and DD
• Number of purchase orders placed and shipments received
• Inventory holding in units, value, and volume
• Net cost of goods sold
Revenue and purchase cost of goods sold for customers
Gross profits
Sales Activity Details for Each Customer from the Sales File
• Number of orders placed
• Number of units purchased for each item
• Delivery location information
• Number of units per order across items
• Net dollar amounts of invoices
Allocate costs to items and construct unit rates for items
1. Add item unit information for customers and allocate purchase and warehousing costs to customers.
2. Allocate sales and marketing, order fulfillment, and other sales-end costs to customers
Allocate sales and support costs to customers
Managerial Inputs and Cost Estimates for Purchase Activities
• General purchasing and vendor maintenance
• Order consolidations and purchase management
• Shipments receiving at warehouse
• Inbound material handling
• Accounts payable
• Inventory holding, space and capital costs
Managerial Inputs and Cost Estimates for Sales Activities
• Order receiving and processing
• Outbound shipment management
• Outbound physical handling
• Accounts receivable
• General sales management and customer service
• Marketing and sales
Customer Profitability

TABLE 1
Descriptive Statistics: Items and Customers

A: Item Activity Profile (6764 Items)

Item	Mean	Median	Range
Quantity in units	678.9	50	1–134,000
Number of total purchases	11.6	3	1–651
Quantity (units) per purchase	120.5	10.5	1–44,667
Percentage of units DD shipped	24.0	0	0–100
Unit upstream costs in dollars	.5	1.8	.005–102

B: Customer Activity Profile (658 Customers)

Item	Mean	Median	Range
Total units purchased	5990.4	147	1–757,252
Number of orders placed	683.1	17	1–107,158
Number of different delivery locations	6.3	1	1–374
DD shipments as percentage of total units[a]	24.5	7.9	0–100
Number of different items ordered	49.0	8	1–1652
Special item units as percentage of total[a]	24.4	8.0	0–100
Dollar value per order	249.8	97.6	2.5–7945

C: Customer Profitability Profile (658 Customers)

Item	All Customers (%)	Median Customer 329 (%)	Median Customer 330 (%)	Range (%)
Net revenue	100	100	100	100–100
Cost of goods sold	84.17	67.09	81.86	26.2–97.6
Gross profit[b]	15.83	32.91	18.14	2.4–73.8
Purchase and warehousing costs	2.62	2.73	4.67	.56–241.2
Order processing and fulfillment costs	2.23	.70	3.91	.3–89.2
Sales and direct marketing costs	2.52	3.45	3.59	1.8–231.4
Total service costs[c]	7.37	6.88	12.18	3.6–306.5
Net customer profits[d]	8.46	26.03	5.96	−251.7–59.6

[a] Mean and median are reported for customers for which item is nonzero.
[b] Computed as net revenue minus cost of goods sold.
[c] Computed as the sum of purchase and warehousing costs, order processing and fulfillment costs, and sales and direct marketing costs.
[d] Computed as gross profit minus total service costs.

tomer base, we present the distribution for two median customers (customers ranked 329 and 330 on sales revenue). The dramatically different cost and margin numbers for these two essentially similar-sized customers highlight the importance of not relying solely on sales revenue.

Linking Customer Characteristics with Customer Profitability

Volume and Price/Margin

Customer size, or total revenue, is an important determinant of profitability. In our data, the top 2% of customers by sales revenue account for approximately 80% of revenues and net profits and 70% of total service costs. This ratio can be considered an extreme form of the celebrated 80/20 rule. At the same time, as many as 214 (32% of total) customers are found to be unprofitable, according to our model. The Schultz coefficient of 86.5 and modified Gini coefficient of .49 also represent the same extremely concentrated distribution of profits across customers.[3] Substantial variation in profitability exists at all levels of revenue, including at the very top.

In Table 2, we present summary statistics for customers, which are organized into 12 groups by revenue. The first group consists of 13 very large (top 2%) customers with revenue in excess of $1 million each. The last group consists of 82 very small customers with annual revenues less than $100. This group consists of atypical, occasional walk-up customers and will be excluded from further analysis because it is insignificant by any criteria. The top group is important enough to warrant a closer examination, which we provide subsequently. The remaining 563 customers are arranged by their sales revenue into ten portfolios (marked 1 through 10 in Table 2) of approximately 56 customers each.

As is shown in Table 2, the average gross margins and service costs percentages monotonically increase with size.

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[3] For a definition of these concentration indicators, see Mulhern (1999).

TABLE 2
Descriptive Statistics for Size Portfolio of Customers (Ranked by Sales Revenues)

		Mean Values			Range		
Group	Share of Total Sales (%)	Gross Profit Margin Percentage	Service Cost as Percentage of Sales	Net Profit Margin Percentage	Gross Profit Margin Percentage	Service Cost as Percentage of Sales	Net Profit Margin Percentage
Very large	78.54	15.12	7.02	8.10	10.03–18.70	4.10–15.48	−1.53–12.45
1	14.28	17.63	9.80	7.83	5.45–33.31	4.75–25.71	−2.19–26.32
2	3.54	21.10	12.25	8.86	9.00–54.07	3.61–37.12	−10.59–50.46
3	1.78	20.47	13.69	6.78	11.44–64.14	4.54–56.39	−25.58–59.59
4	.91	21.57	15.52	6.06	2.36–48.85	4.46–71.95	−53.87–33.44
5	.47	25.61	16.28	9.34	9.97–52.31	5.28–72.03	−35.68–38.96
6	.24	25.54	15.99	9.55	2.35–61.20	5.10–51.53	−31.60–53.02
7	.13	29.60	17.69	11.91	10.00–62.14	7.76–52.43	−30.50–54.39
8	.06	31.77	29.85	1.92	3.54–70.14	10.04–264.94	−243.77–58.87
9	.03	38.82	37.13	1.69	11.52–68.12	16.84–111.97	−79.76–46.73
10	.01	40.44	61.14	−20.70	5.52–71.04	29.20–193.80	−161.92–39.10
Very small	.006	42.21	138.73	−96.54	5.00–73.81	53.12–306.54	−251.70–3.92

The monotonic behavior of costs is primarily due to the volume effect. At lower total sales, there are fewer units to absorb transaction-level and transaction entity–level costs, which makes the costs higher as a percentage of revenue. The distributor appears to compensate partially for higher service costs through higher prices at a lower volume level, as reflected in higher gross margins from smaller customers. The small customers are likely to be price takers, and typically in this situation a high profit margin net of service costs could be expected from these customers. Management at the field site, though intuitively aware of the high service costs of these customers, nevertheless appears to underestimate these costs and fails to recover them in price, which results in many unprofitable small customers. The existence of unprofitable customers in each of the ten portfolios indicates that management does not have a good appreciation of the nature or the magnitude of costs associated with individual service activities or customers.

In Table 3, we present detailed descriptive profiles for each of the 13 very large customers to illustrate that large variation in profitability exists even among this elite group of customers. The 13 customers in this group are ranked in decreasing order of sales revenue. The gross margin varies between 10 and 18.7%. Service cost percentage varies between 4.1 and 15.5%, and the net profit margin varies between −1.5 and 12.5%. There does not appear to be any specific relation among sales revenue, gross margin, and service costs in this group. Some large customers (e.g., Customer 13) have a relatively high gross margin and low service costs, whereas some others (e.g., Customer 6) have a relatively high gross margin and high service costs. Although other reasons, including competitive and strategic factors or a short-term revenue focus of the sales force, cannot be ruled out, to the extent that the pricing policy is distorted by misestimation of service costs, there is a need for a better understanding of costs. For example, our discussions with company management revealed that the less profitable among these large customers (Customers 6 and 11) have recently shifted to ECR. And even though management tried to mark the effective prices for these customers up, it failed to compensate sufficiently for the true increase in the cost of servicing these customers because of incomplete and inaccurate knowledge of customer-specific service costs.

Complexity and Efficiency Factors

We use the following three multiple regression models to analyze the effects of the customer characteristics that represent volume, complexity, and efficiency factors:[4]

(14) [gross profits/service costs/customer profits]
= f(sales revenue, number of orders, number of delivery locations, DD shipment units, number of different items, special item units).

Because customers differ in size by several orders of magnitude, heteroskedasticity is a concern in these regression models, and a White's general test confirms that. To correct for heteroskedasticity, we adopt a weighted least square procedure and divide both sides of our regression equations by the sales revenue variable (Greene 1999). This essentially converts the left-hand measures to respective margins (percentage of sales revenue). The intercept now represents the effect of sales revenue (volume factor) on these margins. Regression results are reported in Table 4.[5]

The gross profit results in Table 4 demonstrate the distributor's success in adjusting prices (or margins) in response to customer characteristics. The service cost results highlight the impact of customer-specific complexity and efficiency factors on service costs. Note that an increase in the magnitude of complexity factors or a drop in the

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[4] Other customer-specific complexity and efficiency factors are essentially variations or functional combinations of these primary factors and therefore are not included in the regression models.

[5] The reported results are for a customer base that includes large customers but excludes the 82 very small customers. Qualitatively similar results were obtained with or without including the very large customers in the sample.

TABLE 3
Descriptive Profiles of 13 Largest Customers

Customer Number	Share of Total Sales (%)	Gross Profit Margin Percentage	Service Cost as Percentage of Sales	Net Profit Margin Percentage	Number of Orders	Number of Delivery Locations	Drop Shipments as Percentage of Total Units	Number of Different Items Ordered	Special Item Units as Percentage of Total
1	18.7	12.05	4.28	7.77	16,449	181	67.0	894	44.6
2	9.0	18.70	7.10	11.59	44,760	374	43.7	1652	12.9
3	8.8	14.60	4.10	10.49	6019	4	57.4	344	39.5
4	7.3	15.16	5.53	9.62	12,651	180	50.0	1012	37.2
5	6.0	18.08	5.63	12.45	8177	195	40.9	935	18.6
6	5.9	16.09	15.48	.61	107,159	275	.0	547	1.6
7	5.3	14.91	5.84	9.07	11,247	163	44.5	888	19.2
8	4.9	15.06	5.46	9.60	10,179	67	53.8	713	31.6
9	4.7	18.50	8.52	9.98	53,689	134	.4	567	10.7
10	2.9	10.03	4.61	5.43	3126	131	80.5	374	26.4
11	2.1	11.56	13.19	−1.53	41,832	29	.0	420	2.5
12	1.5	14.56	5.94	8.62	5159	16	59.3	455	29.3
13	1.4	17.25	5.65	11.61	3655	3	41.6	380	16.1

TABLE 4
Effect of Volume, Complexity, and Efficiency Factors on Gross Profit, Service Costs, and Net Customer Profits

	Intercept	Number of Orders	Number of Delivery Locations	DD Shipment Units	Number of Different Items Ordered	Special Item Units
Gross profit	.22*	.05	27.70*	.40	.96	–.39
(Adjusted $R^2 = .22$)	(.01)	(.85)	(3.15)	(.47)	(1.21)	(.47)
Total service cost	.05*	6.66*	5.87*	–2.33*	.82	2.50*
(Adjusted $R^2 = .66$)	(.01)	(.89)	(3.30)	(.49)	(1.26)	(.49)
Net customer profit	.17*	–6.62*	–23.17*	2.74*	.14	–2.90*
(Adjusted $R^2 = .29$)	(.01)	(1.29)	(4.80)	(.72)	(1.84)	(.72)

*Significant at the $p < .01$ level (two-tailed test).
Notes: Number of observations = 576; standard errors for the estimated parameters are given in parentheses.

efficiency factor is not necessarily bad for the distributor if it is counterbalanced by increased sales or increased margins. The net customer profit results provide this net effect of customer characteristics on the distributor's bottom line.

Except for the number of delivery locations, none of the other complexity or efficiency factors has any significant impact on gross margins. As noted previously, there are not any significant systematic and proportional adjustments in prices in response to most of the customer-specific complexity and efficiency factors. However, we find that these factors have a significant effect on service costs and consequently on net profit margins. Factors resulting in higher complexity (number of orders, number of delivery locations, and special item units) are significantly more costly and have a negative profit impact, whereas factors promoting efficiency (direct delivery units) significantly reduce costs and improve profit. An exception is the number of different items ordered (SKUs). It is not simply more SKUs (which could be common across customers) but a customer-specific (special) SKU that imposes significant additional costs on the distributor. The net cost effect of complexity and efficiency factors in our data dominates their revenue or price effect.

Note that an increase in the number of orders and delivery locations, as well as a decrease in direct delivery units, has a negative impact on net profits. Such changes in the complexity and efficiency factors are typical under an ECR program. Our results show that unless there is a sufficient recovery of increased service costs through volume or prices, such marketing and supply chain innovations may not be as beneficial as is predicted in much of the practitioner literature. Similarly, special items, often considered a source of additional revenues and higher margins, are not so in our data. Salespeople under pressure to bring in revenues often pick up special item orders at prices that do not fully reflect increased service costs. Our results convey that the management and sales force at our field site, and in general, need to be selective in providing services and careful in encouraging specific customer behavior, because many such behaviors could be money-losing propositions in the absence of a proper understanding of their benefits and costs.

Sensitivity Analysis

In this subsection, we compare results from our model with alternative models of customer profitability. Our first benchmark model (BASE) is the traditional method of evaluating customer profitability, which assumes that all sales, service, and supply chain costs are proportional to revenues and allocates these costs to customers as a constant percentage of sales revenue. Under this approach, a customer is profitable as long as its gross margin is greater than the distributor's overall service cost margin. The second benchmark model (MULH) is based on the customer profitability model proposed by Mulhern (1999). This model identifies direct marketing and promotion costs specific to individual customers. However, this model does not identify or allocate costs related to procurement, warehousing, order processing, and other supply chain operations to individual customers. Notice that in our data, these supply chain costs account for approximately two-thirds of the total customer service costs that would be excluded under the MULH model. In Table 5, we present the average net customer profit margin for each of the ten customer portfolios discussed previously. To facilitate comparison, we also provide the gross and net profit margin under our model in Table 5.

The portfolio means for net profit margins for both the BASE and the MULH models are all higher compared with those under our model. Indeed, smaller customers (in Portfolio 10) appear to be quite profitable under both these models. Only 6 customers are unprofitable under the BASE model, and 102 customers are unprofitable under the MULH model, compared with 214 in our proposed model. The higher profitability under the MULH model is primarily due to supply chain costs being excluded. Although the BASE model allocates all costs to customers, it does so at a rate proportional to revenue instead of using any customer-specific allocations. A small customer with few revenue dollars receives a proportionately small allocation of service costs and therefore appears to be more profitable than it does in our proposed model. The overall average service cost margin is 7.37% in our data, and that is exactly the difference between gross margins and net margin under the BASE model for each of the ten customer portfolios.

To test the sensitivity of our results to the variable or fixed nature of costs, we constructed another model (REDC) by excluding all costs that are relatively fixed, those that may represent long-term commitment, and those that may have long-term benefits. These costs include warehousing costs, facility-level management costs, customer service costs, and approximately 30% of sales force costs. Taken together, these excluded costs represent approximately 26%

TABLE 5
Model Comparisons and Sensitivity Analysis

A : Portfolio Means for Net Profit Margins Under Alternative Models

Portfolio Number	Gross Profit Margin Percentage	Net Profit Margin Percentage			
		Our Model	BASE	MULH	REDC
1	17.63	7.83	10.26	15.07	10.48
2	21.10	8.86	13.73	17.90	11.80
3	20.47	6.78	13.10	17.04	9.70
4	21.57	6.06	14.20	17.14	9.39
5	25.61	9.34	18.24	21.17	12.71
6	25.54	9.55	18.17	20.88	12.46
7	29.60	11.91	22.23	24.04	15.00
8	31.77	1.92	24.40	23.15	9.99
9	38.82	1.69	31.45	22.50	6.36
10	40.44	–20.70	33.07	11.29	–16.40
Number of unprofitable customers		214	6	102	180

B: Customer Net Profitability Regressions

	Intercept	Number of Orders	Number of Delivery Locations	DD Shipment Units	Number of Different Items Ordered	Special Item Units
Our Model	.17*	–6.62*	–23.17*	2.74*	.14	–2.90*
(Adjusted $R^2 = .29$)	(.01)	(1.29)	(4.80)	(.72)	(1.84)	(.72)
BASE	.22*	.05	27.70*	.40	.96	–.39
(Adjusted $R^2 = .22$)	(.01)	(.85)	(3.15)	(.47)	(1.21)	(.47)
MULH	.20*	–.50	–9.08*	.46	.98	–.54
(Adjusted $R^2 = .03$)	(.01)	(.86)	(3.19)	(.48)	(1.22)	(.48)
REDC	.18*	–4.49	–28.31*	2.72*	.86	–2.81*
(Adjusted $R^2 = .27$)	(.01)	(1.14)	(4.23)	(.63)	(1.61)	(.62)

*Significant at the $p < .01$ level (two-tailed test).
Notes: Number of observations = 576; standard errors for the estimated parameters are given in parentheses.

of our original total costs. Recall that in our model we have already excluded fixed costs and costs that cannot be identified to individual customers, namely, corporate overhead costs, corporate-level marketing costs, and any customer acquisition costs. Results from this reduced-cost model are given in Table 5. Under the REDC model, 180 customers remain unprofitable. The net profit margins across portfolios follow largely the same patterns as in our proposed model, albeit at higher profit levels.

In Part B of Table 5, we present net profit margin regression results for these three alternative profitability models. For the sake of comparison, the net profit regression results from Table 4 are also replicated in Table 5, Part B. The results for the REDC model are qualitatively similar to those for our model. The results for the BASE model are the same as those for the gross profit margin regression in Table 4, because the net profit margin under this model is simply gross profit margin minus a constant service cost margin for each customer. The net profit margin results under the MULH model are similar to those for the BASE model. Both show no significant association with customer characteristics except in the number of delivery locations (also a driver of sales costs) because of the exclusion of most of the supply chain costs in this model. Overall, our customer profitability analysis results are significantly different from the existing customer profitability models in the literature and clearly show the linkages between customer characteristics and profitability. Moreover, our results do not appear to be qualitatively sensitive to including relatively fixed costs in the computation of customer profitability.

Conclusion

In this article, we examine the drivers of current customer profitability in a supply chain for a large distributor with a heterogeneous client base. We integrate the marketing literature with the latest developments from the management accounting literature and provide evidence on the drivers of customer profitability. We find that, on the one hand, a small percentage of customers contributes to a large percentage of total profits, and on the other hand, a substantial percentage of customers is unprofitable, which further supports prior claims of a similar nature (Hallberg 1995; Mulhern 1999; Peppers and Rogers 1993). We document that many customer purchase characteristics can have opposing effects on the gross margin and service costs, which leads us to conclude that simply focusing on customer revenue as a driver of profitability could be misleading.

A natural follow-up to our study is the question, "How should a firm better manage its customers' profitability?" A customer profitability analysis is primarily aimed at determining what a firm is currently doing and does not indicate per se what a firm should do with respect to managing its customers for better profitability. The ability to conduct the profitability analysis at the individual level, however, makes it possible to make many decisions in a more informed way with a better awareness of the trade-offs involved. Next, we provide some guidelines to managers for how to use the information generated by a customer profitability analysis. We also discuss the implications of industrywide adoption of customer profitability models.

Implications

Customer selection strategies. A blanket approach to drop customers on the basis of current-period profitability is not appropriate. One argument for keeping some unprofitable customers is based on treating them as marginal customers. The marginal cost of doing business for such customers would be less than the full cost we arrive at using ABC analysis. The firm serves these marginal customers, so the argument goes, by using surplus capacity. However, if there is indeed surplus capacity for all customer service activities, then to the extent it is possible, profits could be increased more by shedding some of the surplus capacity than by using it to serve customers that are not justified under full costing. A customer profitability analysis, as advocated in this article, could serve as a first step in identifying where to maintain/divest capacity to manage the profitability of the marginal customers.

A proper decision to acquire or retain customers requires the linking of the two elements of the LTV analysis—present profitability and future profit potential. The future potential should be calculated by a joint assessment of the possibility to induce favorable behavior in terms of service characteristics, forecasted revenue, and expected lifetime duration. Consider the customer classification scheme in Figure 5. Customers in Cell 4 are probably the ones ripe to be divested as a group, whereas customers in Cell 3 are the best and need to be nurtured the most. Customers in Cells 1, 2, and 5 should be steered to more favorable characteristics and greater profits. Customers in Cell 6 are the cash cows, the backbone of a firm's profitability, if not its growth.

FIGURE 5
A Scheme of Customer Classification

		Poor	Marginal	High
Customer's Future Potential	High	1	2	3
	Low	4	5	6

Current Customer Profitability

Customer relationship management. Adoption of information technology–based initiatives and methodologies such as customer profitability analysis enables firms to collect much more customer-specific data, both on their preferences and their transaction patterns. This extensive customer-specific information could offer firms not only better targeting of products and prices but also a better understanding of customer service costs and therefore customer profitability. This ability has important strategic implications as well as broader business policy implications. Among the strategic implications, an interesting issue is the strategic effect of competition on firms' incentives to build customer-specific profitability models. Assume, for example, that firms are asymmetric in their sizes and therefore in their sales volumes or market shares, and further assume that market share is correlated with the share of the loyal customers. It then follows that large firms typically have higher absolute incentives to analyze their customer base to identify the most profitable customers and implement customer relationship management strategies to retain these. The reason is that if these customers are profitable and can be retained through nonprice initiatives, then the firm has effectively isolated the most profitable ones from ruinous price competition (Brooks 1999). Because a larger firm faces a higher opportunity cost in a price competition, it has a higher incentive to take customer relationship management initiatives.

Another example of a strategic effect follows from the possibility of "mistargeting." In a recent article, Chen, Narasimhan, and Zhang (2001) show that when individual targeting is feasible but imperfect, improvement in targeting can often lead to a win–win situation. As a firm becomes better at identifying its own customers, it can achieve a benevolent advantage on its competitors. Because such targeting efforts are predicated on analysis of customer-level data and the profitability of customers, we speculate that understanding customer-level profitability can lead to better targeting and therefore create win–win situations.

Understanding customer-specific service costs in detail would help a distributor understand how the same transactions may also affect costs at the customer's end. This creates an opportunity to eliminate transactions that may not add value to a supply chain and to reengineer the process for symbiotic gains among the supply chain partners rather than continue the typical adversarial relationships between a supplier and its customers. As a manager of Owens & Minor Inc. noted after implementing a pricing scheme based on customer profitability analysis,

> Our relationship has changed from adversarial to a close partnership with parties working together to identify, reduce and eliminate non-value-added activities. Both our firm and its customers have a vested interest in reducing expenses. When customers understand this, they are no longer focused on negotiating a lower fee. (Brem and Narayanan 2000, p. 3)

Among the broader issues, an important one involves how to ensure that the information about customers is used effectively. For example, a firm must design control mechanism and incentive systems that restrict managers, who may take a myopic view of short-term gains, from dropping customers that are unprofitable in the short run. Firms considering dropping certain customers may also face the problems of how to explain the rationale behind their actions to the customers being dropped and whether it is their responsibility to refer the customers to an alternative supplier (Bruns and Harmeling 1998). From an ethical point of view, how to use the information fairly is another business policy issue. For example, should companies be allowed to cherry-pick only profitable customers and drop services to those who need it most? The issue is especially sensitive and has serious welfare implications in industries such as health care, insurance, and even banking and financial services (Gasparino 1999).

Pricing policies. In many situations, a preferred way to deal with unprofitable customers is to change their incentives and prices by adopting a policy of service-based or menu-based pricing so that they become profitable. In a survey of managers in the United Kingdom, the most important use of customer profitability analysis was found to be for pricing policies (Innes and Mitchell 1995). Explicit discounts/surcharges linked to service requirements and costs can be used as tools to implement such pricing. Several financial institutions such as banks now regularly price their services in great detail. Knowing the costs better is not a sufficient reason for a firm to adopt service-based pricing, especially in the presence of strategic or competitive forces. Besides, a price discrimination policy, even if it is based on services provided, could make a firm vulnerable to price-gouging charges. Also, charges of a more serious nature may arise if a demographic or otherwise sensitive group perceives such policies to be selective discrimination.

Evaluating business practices. Analysis of customer service costs and profitability permits a reevaluation of business processes and practices. For example, the distributor in our study engaged in many business initiatives, such as implementing ECR for selected clients, servicing small walk-up customers, adopting electronic data interchange technology, and so on. The managers of our research site believed that imposing an additional constant markup would be sufficient to compensate for the increased costs of implementing ECR for certain customers. As discussed in the previous section, our analysis demonstrated that the profitability of these customers deteriorated under ECR and they were being subsidized by the non-ECR customers. The firm has since revised its pricing and marketing program for ECR. In case of very small customers, it could be beneficial for the distributor to encourage them to become its customers' customers. Our analysis also demonstrates that rationalizing the product line and the assortment carried could lead to cost savings more than enough to compensate for the forgone revenue. Another aspect of streamlining business practices relates to aligning the internal incentive structure of the firm, particularly the sales force incentives. When the sales force is partly compensated on the basis of sales revenue, it might adopt practices such as excessive price discounts or customized products or services (special items) for small revenue increases. A better understanding of costs and profits could help management and salespeople be more selective in pursuing additional revenue or offering special services.

Implications in an e-commerce world. As the recent turmoil in the business-to-consumer dot-com world indicates, selecting and retaining the right customer base is critical to the survival of firms, and wrong investments in this regard can lead to dire consequences. Indeed, capital markets have started to take keen interest in the viability and economics of the customer base of companies, and it is not uncommon to have major market reactions in response to news related to changes in customer bases (Schonfeld 2000). Still, there are no specific regulations that require companies to disclose much about their customer base. To the extent that customer equity has become a large part of firm value, it might be important for regulators to require companies to disclose changes in the distribution of their customer profitability profiles over time. This is a potential opportunity for disclosure policy researchers.

New Internet- and e-commerce–based business models are geared to alter the nature of transactions in existing models of supply chains. Although the economics of these models remain untested, they promise to reduce costs and change customer profits in supply chains. One interesting avenue for further research would be to investigate how the nature of customer service costs changes under the new technology and the implications such changes have for the profitability and LTV of customers.

Limitations and Directions for Further Research

Our model and analysis in this article are based on three simplifying assumptions that need to be considered in general applications of our results. Although these assumptions may be perceived as limiting the generalizability of our results, they also provide rich opportunities for further research in this area. First, following the general accounting convention of allocating costs, we assumed linearity of the cost components with respect to their respective cost drivers. It is conceivable that this relationship may not be linear for certain cost drivers, for example, fulfillment costs that increase at an increasing rate with the number of customized products. Warehousing and storage costs might increase in a stepwise fashion or show an increase at a decreasing rate. To determine the exact nature of the relationship, a researcher can either undertake more detailed industrial engineering–type time and motion studies or elicit and rely on expert opinions about each cost driver (Horngren, Foster, and Datar 1997). Even though we did not go into that level of detail, we point out that by breaking up the total service cost in more than a dozen different activity-based components, the costs are already nonlinear in both total quantity purchased and revenue dollars. Opportunities exist for future researchers to improve the understanding of the behavior of customer service costs and other drivers.

The second simplifying assumption involves taking all the demand and service parameters to be deterministic. Put differently, our analysis is based on total behavior only and ignores the variances in activities and their drivers over time for any given customer. Future researchers could develop richer models to explore how stochasticity in the level of transactions affects customer service costs to maintain the same service level (e.g., by affecting safety inventory).

The third assumption pertains to the existence of demand-side factors that are outside our analysis. These include selecting customers for reasons such as externalities among customers, possible strategic issues in dealing with competitors, and the firm's different bargaining strengths with different customers. Further research in this area could explicitly incorporate the joint nature of these characteristics, because all these factors could be important in evaluating the LTV of these customers.

Most firms should be able to generate the information required for estimating customer profitability from their existing data resources. Despite increasing interest in ABC analysis, most companies are still not routinely tracking the costs associated with activities. We hope that the measurements and methodologies we propose here will encourage future researchers and practitioners to better track customer specific costs and profits as a precursor to developing customer-centric strategies.

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Rajdeep Grewal, James M. Comer, & Raj Mehta

An Investigation into the Antecedents of Organizational Participation in Business-to-Business Electronic Markets

Business-to-business electronic markets have a profound influence on the manner in which organizational buyers and sellers interact. As a result, it is important to develop an understanding of the behaviors of firms that participate in these markets. The authors develop a typology for the nature of organizational participation to explain the behaviors of user firms in business-to-business electronic markets. The proposed model hypothesizes that the nature of participation depends on organizational motivation and ability. The authors conceptualize motivational factors in terms of efficiency and legitimacy motivations and theorize that ability results from the influence of organizational learning and information technology capabilities. They test the model using organizational-level survey data from jewelry traders that conduct business in an electronic market. The results indicate that both motivation and ability are important in determining the nature of participation; however, the level of influence of motivation and ability varies with the nature of participation.

Electronic commerce is a growing reality and provides viable alternatives to traditional forms of commerce. The major impact of electronic commerce is expected to occur in the business-to-business sector, which is estimated to be approximately six times larger than the business-to-consumer electronic commerce sector, and to reach $1.3 trillion by 2003 (*BusinessWeek* 2000). Moreover, many large firms recently have announced their ventures into the realm of business-to-business electronic commerce using Internet protocols (communication standards). For example, the recent alliance between the big three auto manufacturers (General Motors, DaimlerChrysler, and Ford) to establish Covisint (an electronic market for automotive parts suppliers), the launch of RetailLink by Wal-Mart, and the Transfer Process Network by General Electric all fall in this category. In addition, in fragmented industries, a host of third-party–operated electronic markets are emerging; more than 750 were in existence at the beginning of the year 2000 (*The Economist* 2000).[1] Examples include e-STEEL for the steel industry, IMX for home mortgage, and PaperExchange for the paper industry. The economic significance of electronic markets makes it imperative to study them. Our research takes important steps in this direction by studying participant organization behavior in a third-party electronic market.

Despite the interest in third-party electronic markets of practitioners (*BusinessWeek* 1998) and academicians (Kaplan and Sawhney 2000), concerted efforts to understand these markets have been lacking. Previous research emphasizes the effect of new technologies on organizational processes (Glazer 1991; Heide and Weiss 1995) but does not discuss the influences of electronic markets, and the extant case-based research focusing on electronic markets limits itself to the characteristics of the market maker, the firm that manages and administers the market (e.g., Bakos and Brynjolfsson 1993; Hess and Kemerer 1994). The success of electronic markets, however, depends not only on the characteristics of the market maker but also on the value the market provides for the participant organizations. These participant organizations derive value by interacting with other participant organizations in the market. Market makers build such positive network externalities by making it attractive for participant organizations to (1) initially adopt the

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[1] The term "third party" is used to describe electronic markets operated by an intermediary that is neither a buyer nor a seller in the market. Cases of markets operated by buyers or sellers exist (e.g., Sabre, initially sponsored by American Airlines), and these markets are referred to as "biased" markets (Malone, Yates, and Benjamin 1994)

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market, (2) subsequently elect to stay on, and (3) be satisfied with the market.

Building positive network externalities, however, depends on the nature of organizational participation, that is, whether the adopting organizations actively participate in the market or are mere passive observers. If a firm is a passive observer, for example, its presence in the electronic market is of no value to other firms in the market because it is unlikely to engage in business transactions with these other firms. The primary purpose of this research is to investigate the factors that influence the nature of organizational participation in electronic markets, which is important because (1) electronic markets are becoming viable alternatives to traditional markets and hierarchies (Bakos 1998); (2) the commercial potential of electronic commerce is immense, and across the globe business-to-business electronic markets are the fastest growing electronic commerce phenomenon (*BusinessWeek* 1999); and (3) little, if anything, is known about the factors that influence the nature of organizational participation in electronic markets (Alba et al. 1997). Developing an understanding of the nature of organizational participation also would enable market makers to make their markets more attractive to participant organizations.

We rely on the motivation–ability framework (Merton 1957) to develop our conceptual model and make four important contributions. First, we develop and find empirical support for a typology for the nature of organizational participation. We believe that the nature of firm participation is pivotal in developing an understanding of organizational behaviors in electronic markets. Second, we demarcate the two primary organizational motivations for adopting electronic markets; in addition to the traditional efficiency motive, we survey the literature in institutional theory (DiMaggio and Powell 1983) to develop the legitimacy motive. As well as providing realism for the rational models of organizations, the legitimacy motive, together with the efficiency motive, renders a comprehensive conceptualization of organizational motivations. Third, we move beyond case-based research that typically has been used to study electronic markets and use organizational-level survey data to examine our research hypotheses. Fourth, our study tests the motivation–ability theory in the new context of electronic markets. Testing a theory in diverse contexts helps gauge the strengths of the theory and aids in empirical generalizations (Bass 1995).

Electronic Markets

Time and again, technology has had major influences on marketing practice and scholarship. Recent examples include the influence of integrated information and communication technology (Buzzell 1985). These technologies have revolutionized retailing by the use of scanner data, which also has resulted in improved marketing research models (Blattberg, Glazer, and Little 1994; Curry 1993). In terms of facilitating buyer–seller interactions, electronic data interchange (EDI) helps firms build close relationships and facilitate logistics (Stern and Kaufmann 1985). The EDI systems were generally proprietary to the initiating firm (Frazier 1983) and required significant investments on the part of both firms in a relationship (O'Callaghan, Kaufmann, and Konsynski 1992). Nonproprietary EDI systems were often industry created and facilitated logistic and operational management of interfirm relationships (McGee and Konsynski 1989). In this string of technological advances, the most recent phenomenon is the emergence of the Internet. Internet technology has immense implications for various branches of marketing, including consumer (Hoffman and Novak 1996; Peterson, Balasubramanian, and Bronnenberg 1997), business (Kaplan and Sawhney 2000; Klein and Quelch 1997), and international (Mehta, Grewal, and Sivadas 1996; Quelch and Klein 1996) marketing.

Internet-based business-to-business electronic markets represent an interorganizational information system that facilitates electronic interactions among multiple buyers and sellers (Bakos 1991; Choudhury, Hartzel, and Konsynski 1998). At a basic level, electronic markets can be viewed as information technology (IT)–facilitated markets (Bakos 1998). In electronic markets, buyers and sellers come together in a marketspace and exchange information related to price, product specifications, and terms of the trade, and a dynamic price-making mechanism (such as the bid-and-ask system) facilitates transactions between the firms (Kaplan and Sawhney 2000). Depending on the configurations of buyers and sellers and the price-making mechanism used, such electronic markets have been referred to as catalog aggregators, auctions, reverse auctions, or exchanges.[2] Unlike EDI, which helps maintain existing interfirm relationships, electronic markets help buyers search for sellers and sellers search for buyers to engage in transactions. Thus, although EDI helps firms achieve strategic objectives by facilitating operational management of buyer–seller relationships, electronic markets are more strategic and assist firms to interact with other firms in a market setting (as opposed to a relational setting).

Usually an electronic market is sponsored or maintained by a market maker. The primary function of market makers is to gather buyers and sellers in a marketspace (Klein and Quelch 1997). Market makers also may perform other supplementary functions, such as providing credit, warranties, and logistics, and sometimes even may help in negotiations among potential business partners. The business models for market makers tend to vary with the functions they perform in addition to providing the marketspace (Kaplan and Sawhney 2000).

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[2] A catalog aggregator negotiates with vendors to offer their products in an online catalog from which business consumers can buy goods of these multiple vendors for a fixed price set by the catalog aggregator (e.g., SciQuest). In auctions, multiple buyers bid competitively for products from an individual supplier (e.g., Adauction), whereas in reverse auctions, buyers post their needs for a product or service and suppliers bid competitively to fulfill that need (e.g., BizBuyer). Exchanges are two-sided marketplaces with multiple buyers and sellers that negotiate prices, usually through a bid-and-ask system (e.g., PaperExchange). The electronic market we study (Polygon) is an exchange, and we use the term "electronic markets" to refer to these exchanges.

Depending on the position of the market maker in the value chain, an electronic market may be either hierarchical (biased) or market-driven (third-party) (Malone, Yates, and Benjamin 1994). In a hierarchical electronic market, the market maker is also a buyer or a seller. An example of such an environment is a seller-sponsored market such as Sabre (initially sponsored by American Airlines). Hierarchical markets are inherently biased toward the sponsor (i.e., the market maker), and as a result the market maker has advantages over competitors that conduct business in that market. Copeland and McKenney's (1988) detailed study of airline reservation systems (Sabre) points to these disadvantages of biased electronic markets, which eventually limit the scope and the survival likelihood of such markets.

A third party (neither a buyer nor a seller) sponsors an unbiased market-driven electronic market; thus, the market maker does not carry out transactions in the market. Examples include PaperExchange for paper and related products and SportsNet, which links more than 3500 dealers of sports cards. It is these third-party markets that have experienced the most success and are forecasted to dominate fragmented industries (*BusinessWeek* 1999; Krantz 1999). In our research, we study buyers, sellers, retailers, pawnbrokers, appraisers, and other intermediaries that trade in jewelry and related products in a third-party, unbiased, market-driven electronic market, Polygon, as we discuss in greater detail subsequently (henceforth, we use "organization" and "firm" to refer to a user firm that participates in an electronic market).

Conceptual Background

In this section, we provide a rationale for a firm's need to participate in electronic markets and then present background on the nature of organizational participation, the motivation and ability variables, and environmental dynamism, the dominant characteristic of electronic markets. Strategic considerations motivate organizations to build capabilities and preempt competition and thereby to serve customers better (Day and Wensley 1988; Slater and Narver 1995). Considering the prominent role of technology in modern society (Blattberg, Glazer, and Little 1994; Buzzell 1985), it comes as no surprise that organizations view technology as a means of building sustainable competitive advantage (Day and Glazer 1994; Glazer and Weiss 1993). We contend that strategic considerations, such as providing better customer service (Parasuraman and Grewal 2000) and competitive hedging and/or preemption (Dickson 1992), gain significance in the organizational decision to participate in electronic markets.

We theorize that the nature of organizational participation in an electronic market depends on a firm's motivation and ability (Figure 1). Literature in diverse fields such as consumer behavior (MacInnis, Moorman, and Jaworski 1991), organizational behavior (O'Reilly and Chatman 1994), and marketing strategy (Boulding and Staelin 1995) emphasizes the criticality of both motivation and ability. However, we broaden the theorizing on motivations to encompass (1) the traditional emphasis on efficiency (Rindfleisch and Heide 1997) and (2) the institutional motivations of attaining legitimacy, which we refer to as the legitimacy motive (DiMaggio and Powell 1983). Furthermore, we rely on the organizational learning literature (Sinkula 1994) to conceptualize a firm's ability as its (1) learning about the electronic market and (2) IT capabilities. We also study the influence of environmental dynamism that is inherent in electronic markets (Lee and Clark 1997).

Nature of Organizational Participation

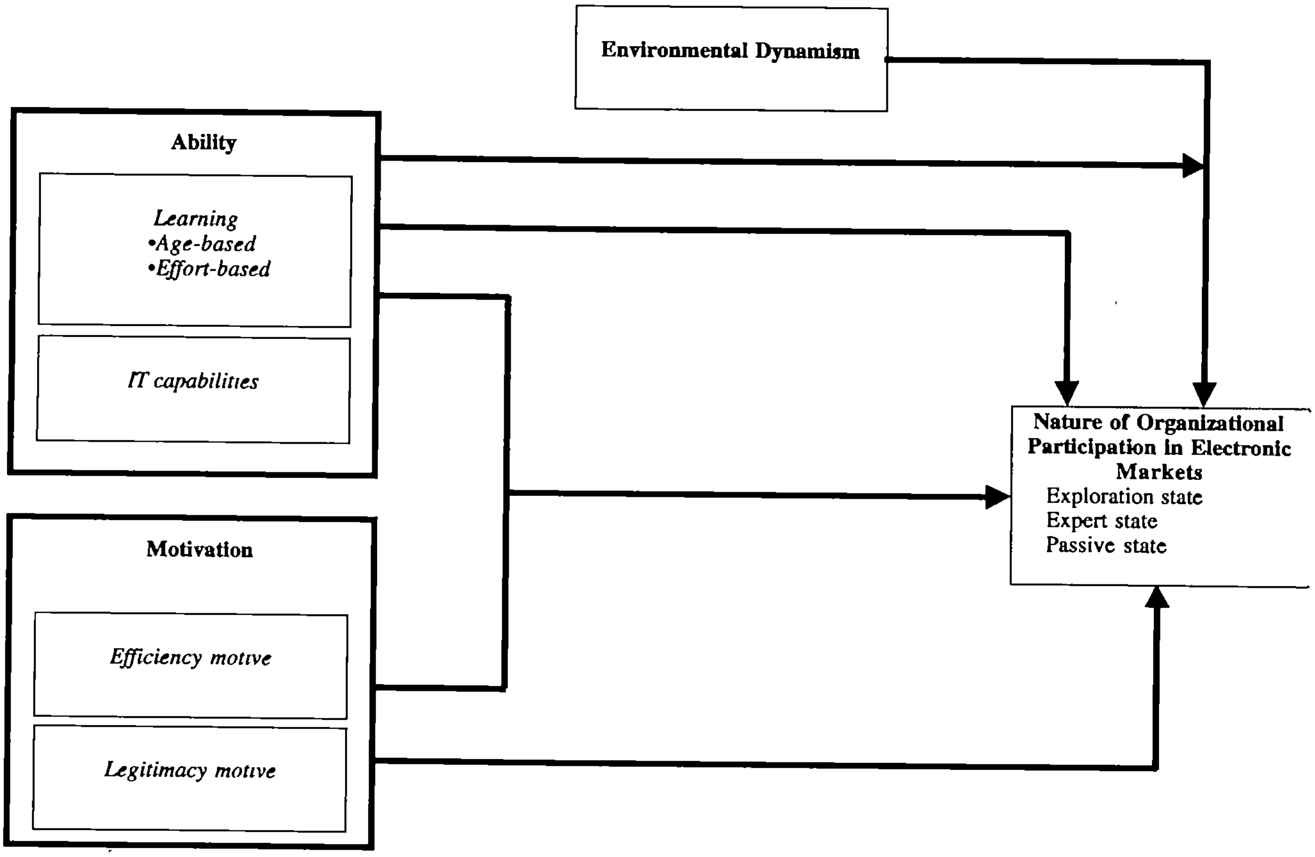
Organizations participate in electronic markets in several ways. At one extreme, organizations spend concerted effort and resources to streamline their electronic market operations. At the other extreme, they adopt electronic markets on an experimental basis (Dickson 1992). We develop a distinct-states conceptualization for the nature of organizational participation to illustrate diverse organizational behaviors in electronic markets. In addition to the literature on innovation assimilation (Meyer and Goes 1988) and electronic markets (Choudhury, Hartzel, and Konsynski 1998), we rely on exploratory interviews to develop our typology for the nature of organizational participation. Several times during the research process, we interviewed the chief executive officer (CEO) and marketing manager of the market maker. The CEO noted that customers were "a mixed lot with many different activity levels." Managers of participant firms also suggested that participants tend to have varying levels of activities in the electronic market.

To capture the varying levels of firm activity in electronic markets, we conceptualize the nature of firm participation in terms of the exploration state, the expert state, and the passive state. In the *exploration state*, firms do not know the requirements to conduct operations in an electronic market effectively but are expending substantial efforts to learn the particulars of doing business in the marketplace. Firms in the exploration state are "testing the waters" to understand the new medium better and in the process are using cognitive, physical, and financial resources. These organizations are trying to sense which business practices they need to reengineer, how they can reengineer, and whether it will be in their best interest to reengineer.

In the *expert state*, firms believe they have been successful in reengineering their business processes to function effectively in the electronic market. Similar to experts, they possess the know-how to perform market-related tasks successfully (Alba and Hutchinson 1987). Expert firms have substantive knowledge about their electronic market and procedural knowledge pertaining to the way of doing business in the market. These firms also understand the cause-and-effect relationships for their activities in the electronic market (i.e., axiomatic knowledge) and are thereby in a position to make high-quality decisions regarding their market operations (Sinkula 1994; Slater and Narver 1995). As the electronic market evolves, the expert firms regularly update their knowledge base about the market to remain current and thereby create episodic knowledge (Sinkula 1994). In a manner, expert firms have made an implicit or explicit pledge to continue conducting business over the electronic medium.

In the *passive state*, organizations carry out virtually no business in the electronic market but continue to maintain a presence. Our exploratory research suggests that the passive

FIGURE 1
Conceptual Framework



state is (1) propagated by firms entering electronic markets on an experimental basis, perhaps to supplement their traditional markets at some time in the future; (2) due to competitive hedging wherein a firm does not believe that electronic markets are viable but considers them to be a future opportunity or threat and therefore wants to observe and learn; (3) perpetuated by low entry barriers, in that entering an electronic market involves buying a computer to access the Internet; and (4) reinforced because maintaining a presence in business-to-business electronic markets is not expensive, requiring a firm simply to pay its monthly subscription fee.[3] Organizations in this state are unwilling to expend the cognitive, physical, or financial resources that are needed to develop human capital and reengineer business practices to conduct business over the electronic medium actively.

Motivation

The literature on organizational founding suggests that the motives, processes, and structures that firms stress at the time of their inception have a long-lasting and perpetual influence on their behaviors (Baum and Oliver 1992; Schulz 1998). Accordingly, we expect the motives a firm emphasizes when entering an electronic market to influence the firm's operations in the market for a substantial period. We suggest that organizational motivations for entering electronic markets include an economic expectation of enhancing efficiency and a normative objective of attaining legitimacy.[4] We rely on transaction cost economics to develop the efficiency motive (Rindfleisch and Heide 1997), and the literature on institutional theory provides the bases for the legitimacy motive (Meyer and Rowan 1977).

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[3] This point with regard to subscription fees probably would be attenuated in markets in which the market maker charges transaction fees. In such a case, a participant firm does not pay until it engages in a transaction, and as a result, passive participants do not incur any financial costs (other than the initial set-up costs) to maintain their presence in an electronic market. Our research studies a subscription fee–based electronic market. In the "Limitations and Further Research" section, we discuss other possible business models for market makers, including those based on transaction fees.

[4] As we elaborate in the "Methodology" section, the importance of organizational motivations is evident from our preliminary interviews with participant firms. Some organizations entered electronic markets to enhance efficiency and streamline their operations. Others entered because (1) their competitors entered the market, (2) they perceived that entering electronic markets would portray an image of being technologically savvy, (3) they were offered a promotion scheme in which they did not need to pay the membership fee for the first three to six months, or (4) the cost of adopting and maintaining a presence was not significant. The second motivation is what we refer to as the legitimacy motive.

Efficiency motive. An economist would argue that electronic markets improve transaction effectiveness and efficiency (Rindfleisch and Heide 1997). Improving efficiency is likely to be driven by the organizational strategic consideration of serving customers better (Day and Nedungadi 1994; Day and Wensley 1988). As Dickson (1992) observes, to serve their customers effectively and efficiently, firms often are motivated to experiment with new ways and innovations. Malone, Yates, and Benjamin (1994) suggest that electronic commerce leads to greater use of markets, rather than hierarchies, because these markets have relatively lower transaction costs. Research in the management of information systems and the economics of electronic markets supports this assertion (Bakos and Brynjolfsson 1993; Gurbaxani and Whang 1991; Hess and Kemerer 1994).

Reducing the cost of doing business is consistent with an organization's attempt to improve efficiency. Recent theoretical developments in transaction cost economics (TCE), which emphasize minimizing transaction costs, explicitly recognize this efficiency orientation and conceptualize TCE as a constrained-efficiency framework (Roberts and Greenwood 1997; Williamson 1992). This perspective regards organizations as efficiency seeking (Nelson and Winter 1982) under cognitive constraints (e.g., bounded rationality; Williamson 1987) and/or institutional restraints (Scott 1987).

Efficiency considerations are usually internal to an organization, but often attempts to enhance efficiency are externally oriented (Oliver 1990). The efficiency motive of reducing the costs of transacting with vendors, for example, might prompt an organization to use automated systems. In addition, the efficiency motive can be used to gauge the emphasis an organization puts on reducing costs and enhancing productivity (internal consideration) when entering an electronic market (external orientation). Over time, this emphasis on efficiency should become embedded in the organizational culture and influence the formal and informal functioning of firms (Deshpandé and Webster 1989). This goal-directed orientation also should increase organizational commitment toward IT and organizational effectiveness in electronic markets (Ginzberg 1981; Newman and Sabherwal 1996).

Legitimacy motive. Institutional theory suggests that organizations must justify their actions and perform in accordance with existing societal norms and institutional expectations (DiMaggio and Powell 1983; Scott 1987). Adhering to societal norms enhances an organization's legitimacy and increases the likelihood of organizational survival. One way for organizations to attain legitimacy is to carry out activities that are deemed suitable by institutional constituents, including the government, consumer bodies, trade associations, and the public.

Electronic markets by their very nature are technologically intensive, and organizations dealing in these environments are likely to be perceived as having technological savvy. Being perceived as technologically knowledgeable is a definite advantage (Glazer and Weiss 1993). Thus, a possible organizational motive to enter electronic markets is to portray an image of technological sophistication. In other words, organizational stakeholders view technologically sophisticated firms more favorably in comparison with technologically naive firms; therefore, the organizational legitimacy of technologically sophisticated firms is higher because they provide a better fit with the modern-day organizational profile.

Organizations also mimic behaviors of a successful benchmarked group (Deephouse 1996; DiMaggio and Powell 1983). Institutional theorists argue that imitation is an uncertainty reduction mechanism in the sense that when a firm successfully adopts a structural change, other organizations mimic the change while attributing their success to the nature of the structural transformation (Haunschild and Miner 1997; Haverman 1993). Firms usually mimic the structures and the processes of other firms that are perceived to be legitimate (Haunschild 1993; Suchman 1995). Diverse research streams, including those on strategic alliances (Pangarkar and Klein 1998) and outsourcing (Lacity and Hirschheim 1993), have studied this mimicking behavior under the rubric of the bandwagon effect. The bandwagon effect suggests that sometimes organizations engage in activities simply because other firms do and provides a possible reason for the prominence of strategic alliances in some industries and their absence from others (Osborn and Hagedoorn 1997). In this study, organizational attempts to appear technologically sophisticated and mimic the behavior of successful organizations are classified as the legitimacy motives.

Ability

Knowledge acquisition and utilization processes help firms build capabilities and sustain strategic competence (Fiol and Lyles 1985). Knowledge developmental processes also provide organizations with resources, assets, and skills to compete effectively (Sinkula 1994; Slater and Narver 1995). Our research studies (1) organizational learning, a major source for building a knowledge base, and (2) a firm's IT capabilities, an avenue for extracting rents from the knowledge base (March 1991). By virtue of the newness and novelty associated with electronic markets, organizations have either not developed business models for this medium or tested existing business models in the medium. Learning therefore becomes pivotal for developing and adopting business models. Organizational capabilities reflect the extent of knowledge utilization in a firm and are critical for building sustainable competitive advantage (Day 1994). In electronic markets, a dominant organizational resource is a firm's IT capabilities (Guha et al. 1997).

Learning. Huber (1991, p. 90) describes knowledge acquisition as "the process by which knowledge is obtained," and this learning by an organization is a function of its age and effort (Garvin 1993). In organizations, experience is a prime source of learning and captures the incessant trial-and-error process by which organizations acquire information (Sinkula 1994). This acquisition of information leads to richer and proprietary knowledge bases. Eventually, the distribution, interpretation, and utilization of knowledge bases result in sustainable competitive advantages.

We examine two important learning constructs. The first is *age-based* or *experiential learning*, which we define as the learning an organization obtains from the extent of its experience and operationalize as the age of a firm's electronic market operations. Experiential learning has been shown to predict organizational survival, even after size and resource-enhancing linkages are controlled for (Brittain 1989), and the literature on operations management documents the positive effect of age on performance (Mody 1989). Although age is an important indicator of learning, it does not capture the effort spent in learning. To overcome this weakness, our second learning construct taps directly into the effort a firm devotes to developing skills to manage an electronic market. We refer to this construct as *effort-based learning* and conceptualize it as the effort, in terms of organizational resources and human capital, used to develop knowledge about an electronic market (Simon 1991).

IT capabilities. Firm capability hinges on the efficient development and use of resources (Sinkula 1994). Information use has been the focus of marketing research since the American Marketing Association/Marketing Science Institute–sponsored workshop on knowledge development (Myers, Massy, and Greyser 1980). This research stream indicates that knowledge development enhances the value of firms' resources and organizational capabilities (Moorman, Zaltman, and Deshpandé 1992). In electronic markets, a participant's IT capability is an important organizational resource, should play a vital role in building sustainable competitive advantages, and should increase the firm's capacity to manage electronic markets (Auer and Reponen 1997; Mata, Fuerst, and Barney 1995).

Organization information processing research suggests that it is not organizational capabilities per se but the fit between organizational information processing needs and capacity that is critical (Galbraith 1973; Tushman and Nadler 1978). Information serves as a means of reducing uncertainty and thereby attaining the desired objective. In turn, information requirements depend on uncertainty, and by extension the desired information processing capacity depends on the information processing needs.

Environmental Dynamism

Environmental dynamism is a dominant characteristic of electronic markets (Klein and Quelch 1997). Rapidly increasing subscription bases, along with ever-changing technologies, characterize electronic markets (Lee and Clark 1997). Environmental dynamism captures these changes in demand and technology (Weiss and Heide 1993), induces uncertainty (Achrol and Stern 1988), and influences organizational structures and processes (Achrol 1991).

Hypotheses

Because we have conceptualized the nature of organizational participation in terms of three distinct states (exploration, expert, and passive), we need to use one of the states as a base state and compare it with the other states. That is, because a firm can be in only one state, the three states compete against one another in some fashion. In formulating our hypotheses, we use the exploration state as the base state because initially almost every firm should be in this state.

Efficiency Motive and IT Capabilities

According to the motivation–ability framework, both firm motivation (efficiency motive) and ability (IT capabilities) should be present to affect organization participation (Merton 1957). Research shows that information systems projects often fail when either motivation or ability is lacking (see Ewusi-Mensah and Przasnyski 1991; Reich and Benbasat 1990). We therefore expect both motivation and ability to influence the nature of organizational participation. Emphasis on the efficiency motive and IT capabilities should enhance the likelihood of a firm being in the expert state and lower the likelihood of the firm being in the passive state.

> H_1: The greater the emphasis on the efficiency motive and IT capabilities, (a) the higher is the likelihood of a firm being in the expert state and (b) the lower is the likelihood of a firm being in the passive state.

Organization information processing research suggests that the influence of IT capabilities is likely to be nonlinear (Daft and Lengel 1986). As Day (1994) observes, the market dictates the extent and nature of capabilities that an organization develops, and the information processing needs determine the extent of information processing capacity required (Day and Glazer 1994). As organizational information processing capacity increases, the need to develop more of this capability declines (March 1991). In other words, to a specific level, IT capabilities should help a firm reach the expert state and reduce the chances of the firm being in the passive state, but eventually the influence of IT capabilities should level off. We therefore hypothesize that as the level of IT capabilities increases, the likelihood of a firm being in the expert state increases, but at a declining rate. We also propose that as the level of IT capabilities increases, the likelihood of a firm being in the passive state decreases, but at a declining rate.

> H_2: As the level of IT capabilities increases, IT capabilities (a) positively affect the likelihood of a firm being in the expert state, but at a declining rate, and (b) negatively affect the likelihood of a firm being in the passive state, but at a declining rate

Legitimacy Motive

Legitimacy motives represent organizational attempts to adopt electronic markets either to portray a specific image to stakeholders or to mimic benchmarked organizations. Legitimacy is construed as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially construed system of norms, values, beliefs, and definitions" (Suchman 1995, p. 574). It seems that if enhancing organizational legitimacy is the motive for joining an electronic market, an organization achieves its objective just by entering the market. In other words, by virtue of a firm's entry into an electronic market, it is in a position to assert to its stakeholders that it is technologically advanced and ready for the challenges of the information age. Organizations that embrace electronic markets to mimic a successful benchmark firm believe that the benchmarked organization succeeded primarily because of its participation in electronic markets. In summary, some organizations ceremoniously adopt electronic markets as a mere pretense to attain legitimacy (DiMaggio and Powell 1983; Scott 1987).

For firms that emphasize the legitimacy motive, attempts to acquire knowledge or build capabilities are likely to be minimal. Reaching the expert stature without knowledge development is unlikely (Alba and Hutchinson 1987). In other words, simply entering electronic markets may not be sufficient to attain the expert state, which requires a firm to learn new routines, rules, and strategies. Attaining legitimacy in the eyes of stakeholders and adopting electronic markets on an experimental basis are likely to motivate a firm to maintain presence in the electronic market, even if the presence does not yield direct economic gains. Therefore, emphasis on legitimacy motives should lower the likelihood of a firm being in the expert state and increase the likelihood of the firm being in the passive state.

> H_3. The more an organization subscribes to legitimacy motives for entering an electronic market, (a) the lower is the likelihood of a firm being in the expert state and (b) the higher is the likelihood of a firm being in the passive state

Learning

Research on organizational learning suggests that age-based learning helps capability development (Sinkula 1994). However, such learning has been shown to have limitations related to unintentional and unsystematic learning. As Levinthal and March (1993, p. 96) observe, "Experience is a poor teacher, being typically quite meager relative to the complex and changing nature of the world in which learning is taking place." Frequently, employees are the sensors that gather information and draw inferences. The cognitive constraints of rationality that inhibit human activity are also likely to impede age-based learning (Dickson 1992). Experience also tends to be ambiguous, with multiple and conflicting interpretations, making it difficult to decipher the "complex worlds" (Levinthal and March 1993, p. 97). Research on experience curves attests to this supposition and demonstrates that learning increases with age, but at a decreasing rate (Bass 1995). We expect age-based learning to increase the likelihood of a firm being in the expert state, but the rate of increase should lessen with age. Firms that are not effective learners, however, should sooner or later move to the passive state, and the probability that these firms will move into the passive state should vary positively with the age of their electronic market operations.

> H_4: As the level of age-based learning increases, age-based learning (a) positively affects the likelihood of a firm being in the expert state, but at a declining rate, and (b) negatively affects the likelihood of a firm being in the passive state at an increasing rate.

In addition to age-based learning, the effort that an organization spends in developing its knowledge bases is an important aspect of organizational learning. However, effort does not imply automatic success; organizations often spend considerable efforts in new ventures and fail (Golder and Tellis 1993). In such cases, firms fail to develop the skills and knowledge bases needed to manage the new ventures (Tushman and Anderson 1997). If effort-based learning is successful, it helps firms build their skill levels and move on to the expert state. In contrast, if effort fails to develop knowledge, the commitment to a failing course of action is likely to be minimal, and the level of effort should decline. Therefore, the probability of the firm moving to the passive state should increase.

> H_5: As the emphasis on effort-based learning increases, (a) the likelihood of a firm being in the expert state increases and (b) the likelihood of a firm being in the passive state increases.

Environmental Dynamism

Dynamic environments are characterized by high variability in demand and unpredictability regarding the actions of competitors (Achrol and Stern 1988). Research suggests that environmental dynamism makes it difficult for organizations to assimilate and anticipate environmental conditions and has an adverse influence on performance (March 1991). These challenges make it hard for firms to identify and develop the skills needed to succeed. As a result, learning is likely to be a longer and a more deliberate process. We therefore expect environmental dynamism to reduce a firm's likelihood of being in the expert state. Environmental dynamism is also likely to frustrate firms and therefore increase the likelihood that the firms give up in dynamic markets, thereby enhancing the probability of the firms being in the passive state.

> H_6: The higher the environmental dynamism in an electronic market, (a) the lower is the likelihood of a firm being in the expert state and (b) the higher is the likelihood of a firm being in the passive state.

Firm-specific factors typically moderate the influence of environmental variables (Dess and Beard 1984). In electronic markets, IT capability is one such firm-specific variable that should help organizations manage environmental dynamism; it is an organizational resource and reflects a firm's ability to exploit accumulated information. Organization information processing theory (Daft and Lengel 1986) also suggests that IT capabilities help manage environmental dynamism and therefore should moderate its effect.

> H_7: Information technology capabilities will moderate (a) the negative influence of environmental dynamism on the likelihood of a firm being in the expert state and (b) the positive influence of environmental dynamism on the probability of a firm being in the passive state.

Methodology

Research Context

In our research, we study the nature of participation of firms that adopt Polygon, a market-driven electronic market for jewelry and related products (www.polygon.net). Polygon Network Inc. was founded in 1983, primarily to provide an electronic market for jewelry pawnbrokers, appraisers, manufacturers, wholesalers, retailers, buyers, and sellers. It is a subscription-based service for which members pay a monthly access fee, which enables them to buy and/or sell such jewelry items as cut diamonds, watches, and rings, as well as acquire other benefits such as gemological and related technical information. Polygon migrated in the late 1980s to an exchange format and facilitated interfirm transactions by having user firms call the Colorado server to retrieve their e-mail and information from the buyer–seller bulletin board. In 1995, Polygon acquired the domain name polygon.net and began its migration to Web-based operations. Although the transition to the Web has eased access for user firms, the nature of the information exchange has remained the same. Polygon represents an "open bazaar" in which buyers and sellers meet in an electronic environment and that makes it efficient for firms to exchange information related to price, product specifications, and terms of trade. Although Polygon does not enable participating firms to make payments electronically, it provides ratings for all participating firms based on their payment history.[5]

Independent Measures

Following standard psychometric procedures (Churchill 1979), we created a pool of items for each of the constructs (all items were measured on a five-point semantic differential scale, where 1 = "disagree" and 5 = "agree"), with the exception of age-based learning. We extensively field tested the items by means of personal interviews with Polygon subscribers.

The efficiency motivation construct gauged the degree to which a firm stressed cost reduction and output enhancement when joining Polygon. We used four items that measured organizational emphasis on (1) increasing efficiency, (2) reducing costs of doing business, (3) streamlining operations, and (4) reducing the costs of transacting with exchange partners. The first two items for the legitimacy motivation construct measured the extent to which the firm mimicked competitors and other jewelers, respectively; the third item emphasized legitimacy attainment as a motive; and the final item gauged the extent to which the organization wanted to portray the image of being high tech. We measured a subscriber's IT capabilities by adapting six items from King and Teo's (1996) study of facilitators and inhibitors for the strategic use of IT. To assess effort-based learning, we used a two-item measure. The first item gauged the time and effort expended by employees to learn about Polygon. The second item measured the overall organizational effort. Finally, we adopted Klein, Frazier, and Roth's (1990) environmental dynamism scale.

We used the age of an organization's Polygon operations to assess age-based learning (Brittain 1989). Another instrument for age-based learning could be the number of years in business, not the tenure of involvement with an electronic market. We believe that the tenure of involvement is a more suitable instrument for at least two reasons. First, electronic markets are quite different from traditional forms of commerce, and therefore learning about them is likely to be critical. Second, years in business induces other effects, such as creating inertia (Chandrashekaran et al. 1999), thereby making it difficult to decipher the effect of learning about the electronic market. Bricks-and-mortar retailers, for example, were slower to establish their electronic retail outlets than were new start-ups. However, years in business is an important variable, and further research should examine the dynamics propagated by it.

Dependent Measure: The Nature of Organizational Participation

We used a polychotomous dependent variable to measure the nature of organizational participation. While developing this measure, we assessed the finest possible classification for the nature of organizational participation. This measurement serves two purposes: (1) It helps us rule out the possibility of a fourth state, and (2) it provides flexibility because it is easier to aggregate data than to disaggregate them. The dependent measure asked respondents to choose one of six categories that best described their present Polygon operations. Table 1 details the specific statements for each category. We used two statements to measure the exploration state, one to categorizes the expert state, and three to measure the passive state.

Pretest

To obtain a preliminary assessment of the internal validity of our measurement instrument, we mailed 300 questionnaires to Polygon subscribers and received 34 complete and usable responses. We used item-to-total correlation to assess the validity of the measurement instruments. These correlation

TABLE 1
Measures for the Nature of Organizational Participation

State	Measures
Exploration State	We have recently initiated the Polygon service and are beginning to learn how to do business through them.
	We have learned a lot about the way to do business on the Polygon, but there is still much more to learn. Our comfort level with doing business on Polygon is improving with every passing day.
Expert State	We are comfortable with our Polygon operations and are aware of the ins and outs of these operations. Our dealings on the Polygon are a regular part of our business, and we think that there is not much new to learn.
Passive State	We carry virtually no business through Polygon but still are listed as a member of Polygon Network and will continue to be listed with Polygon.
	We are seriously considering terminating our Polygon operations.
	We have terminated our relationship with Polygon.

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[5] Polygon has debated moving to a transaction-fee model. It has concluded that its neutrality is important for the success of the market. The company also believes that by taking a cut of transactions, it may become more interested in making the transaction and compromise its neutrality Therefore, as a conscious decision, Polygon has decided to stay away from a transaction-based fee structure.

coefficients were greater than .78 for all items, and therefore we retained all items. In the final study, we mailed the questionnaire to the remaining 1846 Polygon members and followed the same procedure as in the pretest.

Sample and Nonresponse Bias

We mailed the questionnaire to all 2146 Polygon subscribers in our sample frame and received 306 responses. The survey consisted of the scale items under investigation and a cover letter stating the purpose of the study and that Polygon Network Inc. endorsed the study. The cover letter noted that the purpose of the study was to research organizations at the frontier of adopting the Internet and carrying out electronic commerce. Polygon Network Inc. supplied the name of the key respondent for each firm, and typically the key respondent interacted with the Polygon Network Inc. on a regular basis.

We used the χ^2 statistic to compare the sample (both pretest and final study combined) characteristics with those of the population (all Polygon subscribers) (Table 2). The results showed no significant differences between the characteristics of the sample and the population ($\chi^2 = .875$, degrees of freedom [d.f.] = 3, $p > .83$). We compared the responses to our independent variables for the early respondents with those for the late respondents and the pretest respondents with those for the respondents in the final study and found no statistical differences (Armstrong and Overton 1977).

Measure Validation

We carried out measure validation in two phases. First, we personally interviewed three Polygon members and the CEO and marketing manager of Polygon Network Inc. to determine what it meant to do business in this electronic market. On the basis of our discussions, we sought to refine our conceptual model and develop a sample list of items. Then we conducted a second round of interviews to verify our conceptual model and refine our measures. Second, we used confirmatory factor analysis (CFA) to establish the convergent validity for the efficiency motive, legitimacy motive, effort-based learning, IT capabilities, and environmental dynamism scales (Table 3).

We retained all items for the efficiency motive, effort-based learning, and dynamism scales. The item deleted from the legitimacy motive scale emphasized mimicking competitors. Two items were deleted from King and Teo's (1996) scale. The four remaining items measured a firm's (1) IT planning capabilities, (2) strength of technical support staff, (3) understanding of benefits from the application of IT, and (4) knowledge about IT. Our CFA results show that all factor loadings were greater than the recommended .4 cut-off and were statistically significant (Nunnally and Bernstein 1994). The χ^2 statistic was not significant, which implies that the sample and estimated covariance matrix were alike. The goodness-of-fit index, adjusted goodness-of-fit index, nonnormed fit index, and comparative fit index were greater than the recommended .9; the parsimony normed fit index was greater than the recommended .6; and the root mean square error of approximation, as recommended, was less than .08 and not statistically different from .05 (Hair et al. 1995). To assess the validity of our measure for age-based learning, we used its correlation with (1) the number of transactions made per week on the Polygon and (2) the annual dollars transacted through Polygon. As we expected, these correlation coefficients were positive and statistically significant ($r = .296, p < .01, n = 171$; $r = .191, p < .02, n = 171$, respectively)

To establish the internal consistency of our measurement model, we examined the reliabilities and average variance extracted (Fornell and Larcker 1981). All the reliabilities were greater than the recommended .7 (Nunnally and Bernstein 1994). The average variance extracted for each measure was greater than the recommended .5, with the exception of the scale for legitimacy motivation, which extracted 46% of variance (Bagozzi and Yi 1988). Additional research could refine our measure of the legitimacy motive. We used two methods to assess discriminant validity. First, the 95% confidence bands around the ϕs did not contain 1 (Anderson and Gerbing 1988). Second, we compared the average variance extracted with the ϕs (Fornell and Larcker 1981). The average variance extracted was greater than the respective ϕs for all measures. Table 4 displays the descriptive statistics.

We used a series of t-tests to examine the differences across the three states for (1) the number of transactions per week, (2) the percentage of business transacted through Polygon, and (3) the time since the adoption of Polygon. We expected the number of weekly transactions to be higher for both the exploration and the expert state in comparison with the passive state, which was the pattern of results we obtained. For the exploration versus passive comparison, we obtained $b = 2.30, p < .01$, and for the expert versus passive comparison, we obtained $b = 2.59, p < .01$. A comparison of the exploration and expert states gave us $b = -.29, p > .78$ (although this test was not significant, in absolute terms, the number of weekly transactions was higher for the expert state). Thus, in terms of number of weekly transactions, the exploration and expert states were statistically equal to each other but higher than the passive state.

As with the number of transactions, the percentage of business that firms undertook through Polygon in the passive state (2.58%) was statistically lower than that of firms in either the exploration (18.31%; $b = 15.73, p < .01$) or the expert (19.95%; $b = 17.37, p < .01$) state. Again, although firms in the expert state transacted more business over Polygon than did firms in the exploration state, statistically the two values were equal ($b = -1.65, p > .70$).

Typically, firms enter the exploration state and then move to either the expert or the passive state. In terms of average time since the adoption of Polygon, our results supported this assertion. Specifically, the age of Polygon operations of firms in the exploration state was statistically lower

TABLE 2
Sample Classification

Type of Business (%)	Sample Characteristics	Population Characteristics (Supplied by Polygon)
Retailers	59.1%	60.0%
Wholesalers	23.2%	20.0%
Pawnbrokers	9.5%	10.0%
Miscellaneous (e.g., manufacturers, designers, appraisers)	8.2%	10.0%

than that of firms in either the expert (b = –9.03, $p < .07$) or the passive (b = –11.50, $p < .05$) state. In addition, there was no statistical difference between firms in the expert state and those in the passive state (b = –2.46, $p > .77$).

Taken together, the results suggest that the three states differ from one another in expected manners. The exploration state differed from the expert state in terms of time since adoption of Polygon, and both of these differed from the passive state in terms of the number of weekly transactions and the percentage of business transacted over Polygon.

Estimation Model

Because we have a discrete dependent variable with three states (i.e., exploration, expert, and passive), we used a multinomial logit (MNL) model to test our hypotheses. Specifically, we estimated the following model:

TABLE 3
Measurement Model Results

Constructs and Items	Factor Loading (t-Value)
Efficiency: We decided to subscribe to Polygon because	
We thought it would increase our efficiency.	.66 (11.0)
We expected it to reduce our costs associated with running our business.	.85 (15.4)
We thought it would streamline our operations.	.79 (13.9)
We believed that it would reduce the cost associated with transacting business with our exchange partners.	.73 (12.3)
Legitimacy: We decided to subscribe to Polygon because[a]	
It would provide legitimacy to our organization.	.76 (11.3)
It portrays us as a high-tech organization.	.74 (11.0)
The best in the business at the time were doing so.	.50 (7.4)
Effort-Based Learning: We are interested in your experiences with using the Polygon system. To what extent do you agree with the following statements?	
Our personnel have spent a lot of time and effort learning specific techniques used in the Polygon.	.52 (5.8)
Our organization has expended a lot of time and effort to develop our Polygon operations.	.90 (7.0)
IT Capabilities: The following questions pertain to information technology (IT) capabilities for your organization. Your firm currently[b]	
Has strong IT planning capabilities.	.83 (14.7)
Has strong technical support staff.	.82 (14.5)
Has an understanding of possible benefits of IT applications.	.63 (10.2)
Has adequate knowledge about information technology.	.68 (11.4)
Environmental Dynamism: Please focus on the BUYING/SELLING environment through the Polygon. To what extent do you agree with the following statements?	
We are often puzzled by actions of retailers and wholesalers.	.78 (11.5)
We are often astonished by actions of our competitors.	.71 (10.6)
We are often surprised by our customers' actions.	.62 (9.2)
χ^2 (d.f., *p*-value)	96.48 (94, .41)
Root mean square error of approximation (*p*-value)	.010 (.99)
Goodness-of-fit index	.96
Adjusted goodness-of-fit index	.94
Nonnormed fit index	.99
Parsimony normed fit index	.73
Comparative fit index	.99

[a] One item was deleted after confirmatory analysis. It read, "Our competitors joined Polygon."
[b] Two items, "Is experienced with IT" and "Gives high importance to strategic use of IT," were deleted.

TABLE 4
Descriptive Statistics, Reliabilities, Average Variance Extracted, and Intercorrelations Among the Refined Measures

Construct	Mean	Standard Deviation	Reliability	Average Variance Extracted	LEGIT	IT_CAP	AGE	EFFORT	ENV_DYN
EFF	3.400	.867	.85	.58	.343*	.026	.069	–.166*	.092
LEGIT	2.768	.868	.71	.46		.034	.043	–.288*	.084
IT_CAP	3.568	.798	.83	.56			.095	–.088	–.205*
AGE	4.223	6.465	—	—				–.006	.084
EFFORT	3.342	.801	.69	.54					.023
ENV_DYN	3.106	.718	.75	.50					

*$p < .01$.

$$\begin{aligned}(1)\quad \text{ORG\_PAR} = {} & \beta_0 + \beta_1 \times \text{EFF} + \beta_2 \times \text{LEGIT} \\ & + \beta_3 \times \text{AGE} + \beta_4 \times \text{AGE}^2 + \beta_5 \times \text{EFFORT} \\ & + \beta_6 \times \text{IT\_CAP} + \beta_7 \times \text{IT\_CAP}^2 \\ & + \beta_8 \times \text{ENV\_DYN} + \beta_9 \times \text{EFF} \times \text{IT\_CAP} \\ & + \beta_{10} \times \text{ENV\_DYN} \times \text{IT\_CAP} + \varepsilon,\end{aligned}$$

where ORG_PAR is the polychotomous dependent variable with the exploration state as the base, EFF stands for efficiency motive, LEGIT represents the legitimacy motive, AGE denotes age-based learning, EFFORT represents effort-based learning, IT_CAP depicts IT capabilities, and ENV_DYN designates environmental dynamism. The maximum likelihood estimate for this model yields two sets of estimates, one for the expert state and the other for the passive state.

Results

Overall Model Test

In Table 5, we display the results from our MNL model with the exploration state as the base. The likelihood ratio test for the overall fit of the model indicates that the independent variables explain statistically significant variance in the dependent measure ($\chi^2 = 58.06$, d.f. = 20, $p < .01$). In addition to establishing descriptive validity for the structure of the model, it is also important to evaluate the predictive validity of the

TABLE 5
Estimation Results from the Multinomial Logit Model

Independent Variable	Coefficient (Expert State)[a]	Coefficient (Passive State)[a]
Constant (β_0)	15.674*** (6.530)	10.528** (5.872)
EFF (β_1)	–3.612*** (1.267)	–1.858** (.967)
LEGIT (β_2)	–.355* (.221)	–.203 (.208)
AGE (β_3)	.473*** (.191)	.074 (.074)
AGE × AGE (β_4)	–.024** (.013)	.001 (.002)
EFFORT(β_5)	.389* (.239)	.293* (.213)
IT_CAP (β_6)	–4.508** (2.252)	–3.836** (2.040)
IT_CAP × IT_CAP (β_7)	–.108 (.253)	.247* (.182)
ENV_DYN (β_8)	–2.294** (1.371)	–.794 (1.048)
EFF × IT_CAP (β_9)	.879*** (.330)	.294 (.244)
ENV_DYN × IT_CAP (β_{10})	.757** (.379)	.371 (.292)
Log-likelihood	–234.400	
Restricted (slope = 0) log-likelihood	–263.425	
χ^2	58.06*** (d.f. = 20, $p < .01$)	

Predictive Validity (n = 248)

Maximum chance criteria[b]	.456
Proportional chance criteria[b]	.358
Proportion correctly classified (model)	.540

[a] Standard errors are in parentheses (one-tailed tests).

[b] We extended Morrison's (1969) proportional chance criteria and maximum chance criteria from a two-category discriminant problem to a three-category problem. If α, β, and γ are the proportion of respondents in each of the three categories, maximum chance criteria would be the maximum of these three proportions, and proportional chance criteria would be $\alpha^2 + \beta^2 + \gamma^2$.

*$p < .10$.

**$p < .05$.

***$p < .01$.

model. We used estimates from the MNL model to carry out a discriminant exercise and tabulate the proportion of correct predictions (Table 5). The proportion of correct classifications for the model is 54.0%, which is greater than the two benchmarks recommended by Morrison (1969): maximum chance criterion (45.6%) and proportional chance criterion (35.8%).

Because we have interaction terms in our model, we interpret the main effects as contingent on the appropriate interaction term (Jaccard, Turrisi, and Wan 1990). The main effect of efficiency, for example, represents the impact of efficiency when IT capabilities equal zero. Mathematically then, $y = \beta_0 + \beta_1 \times \text{EFF} + \beta_9 \times \text{EFF} \times \text{IT\_CAP}$, and when $\text{IT\_CAP} = 0$, $y = \beta_0 + \beta_1 \times \text{EFF}$. Therefore, in a way, β_1 by itself is meaningless, because the influence of efficiency varies with IT capabilities. To aid in interpreting these coefficients, we carried out Wald tests for the significance of the efficiency motive and environmental dynamism at various levels of IT capabilities and for the significance of IT capabilities at various levels of the efficiency motive and environmental dynamism (Table 6).

Antecedents of the Expert State

The first hypothesis suggests that both IT capabilities and an efficiency motive would be needed for a firm to be in the expert state. We find support for this assertion ($\beta_9 = .879$, $p < .01$). To provide a better understanding of this interaction effect, we examined the efficiency motive at three levels of IT capabilities. As Table 6 shows, the influence of the efficiency motive on the likelihood of a firm being in the expert state increases from −1.178 ($p < .01$) at low levels of IT capabilities to .266 ($p > .46$) at high levels of IT capabilities. H_2 posits that, as IT capabilities increase, the positive effect of IT capabilities on the likelihood of a firm being in the expert state will decline. We do not find support for this hypothesis ($\beta_7 = -.108$, $p > .33$). Our hypothesis on the legitimacy motive, which proposes that an emphasis on the legitimacy motive will decrease the likelihood of a firm being in the expert state, is marginally supported (H_3: $\beta_2 = -.355$, $p < .10$). H_4 suggests that age-based learning tends to increase the likelihood of a firm being in the expert state and that this positive effect diminishes as the level of age-based learning increases. Our data support this hypothesis, with significance of both the linear ($\beta_3 = .473$, $p < .01$) and square ($\beta_4 = -.024$, $p < .05$) terms for age-based learning. As Figure 2 shows, the influence of age-based learning increases at a decreasing rate. H_5 posits a positive relationship between effort-based learning and the likelihood of a firm being in the expert state. We find marginal support for this hypothesis ($\beta_5 = .389$, $p < .10$). We hypothesized in H_6 that environmental dynamism would have a negative effect on the probability of a firm being in the expert state and in H_7 that IT capabilities would moderate this negative effect. Our results support both these hypotheses (H_6: $\beta_8 = -2.294$, $p < .05$; H_7: $\beta_{10} = .757$, $p < .05$). As Table 6 shows, the effect of environmental dynamism varies from a low of −.197 ($p > .62$) at low levels of IT capabilities to a high of 1.012 ($p < .05$) at high levels of IT capabilities.

Antecedents of the Passive State

H_1 posits that emphasis on both IT capabilities and efficiency motives should decrease the likelihood of a firm being in the passive state. Our results do not support this hypothesis ($\beta_9 = .294$, $p > .12$). The main effect for the efficiency motive ($\beta_1 = -1.858$, $p < .05$) shows that such an emphasis reduces the likelihood of a firm moving to the pas-

TABLE 6
Results for Interaction Effects[a]

Hypothesis	Low[b]	Medium[b]	High[b]
Effect on the Expert State			
Coefficient of efficiency as a function of IT capabilities.	−1.178† (.407)	−.477** (.245)	.226 (.305)
Coefficient of environmental dynamism as a function of IT capabilities.	−.197 (.395)	.408* (.260)	1.012*** (.402)
Effect on the Passive State			
Coefficient of efficiency as a function of IT capabilities.	−1.043† (.339)	−.808† (.219)	−.573*** (.240)
Coefficient of environmental dynamism as a function of IT capabilities.	.232 (.318)	.529*** (.239)	.824*** (.348)

[a] Standard errors are in parentheses (two-tailed tests).

[b] We define high as μ (mean) + σ (standard deviation), medium as μ, and low as μ − σ. We now illustrate one case of the Wald test. Consider the influence of efficiency at a high level of IT capabilities. The mean for IT capabilities is 3.568, and the standard deviation is .798, which implies that high IT capabilities equal 4.366 (see Table 4). The effect of efficiency on a firm in the expert state is given as $\text{ORG} - \text{PAR} = \beta_1 + \beta_9\text{IT\_CAP}$, and at a high level of IT capabilities this effect equals $\text{ORG} - \text{PAR} = \beta_1 + \beta_9 \times 4.366$. Because $\beta_1 = -3.612$ and $\beta_9 = .879$ (see Table 5), ORG_PAR = .226 (Table 6). Similarly, we can calculate the standard error as $\beta_1^2 + \beta_9^2 4.366^2 + 2 \times 4.366 \times \beta_1\beta_9\text{Cov}(\beta_1, \beta_9)$.

*$p < .12$.

**$p < .10$.

***$p < .05$.

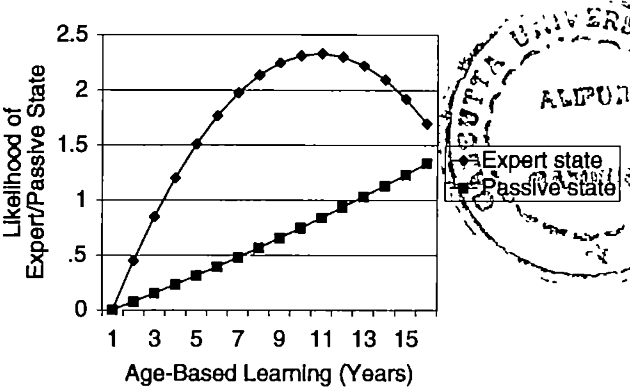
†$p < .01$.

sive state. H_2 proposes that the IT capabilities will negatively influence the probability of a firm being in the passive state and that this negative influence will decrease as the level of IT capabilities increases. Our results support this hypothesis because both the linear ($\beta_6 = -3.836$, $p < .05$) and square ($\beta_7 = .247$, $p < .10$) terms are significant. H_3 suggests that the legitimacy motive will have a negative effect on the probability of a firm being in the passive state. Our data do not support this hypothesis ($\beta_2 = -.203$, $p > .17$). We expected the negative effect of age-based learning on the likelihood of a firm being in the passive state to increase with the level of age-based learning. Our results do not support this hypothesis, because neither the linear ($\beta_3 = .074$, $p > .16$) nor the square ($\beta_4 = .001$, $p > .31$) terms are significant. We hypothesized in H_5 that effort-based learning would move a firm away from the exploration state, and we find support for this hypothesis ($\beta_5 = .293$, $p < .10$).[6] Environmental dynamism was hypothesized to influence the probability of a firm being in the passive state positively, and we expected this positive effect to be moderated by IT capabilities. We do not find support for either the main effect hypothesis (H_6: $\beta_8 = -.794$, $p > .22$) or the moderating role of IT capabilities (H_7: $\beta_{10} = .371$, $p > .11$).

Discussion

Our findings suggest that participating firms must emphasize the right motives and should have the requisite capabilities to participate actively in electronic markets. An emphasis on the efficiency motive and IT capabilities is critical for firms to attain the expert state and avoid the passive state. There is, however, a critical difference between the results for the expert state and those for the passive state. For the expert state, the interaction term between the efficiency motive and IT capabilities is significant, whereas this interaction term is not significant for the passive state. In other words, the influences of the efficiency motive and IT capability on the likelihood of a firm being in the passive state are independent of each other, whereas in the case of the expert state, the two variables act as catalysts in attenuating each other's influence. The finding that IT capabilities help firms manage the dynamism inherent in electronic markets further strengthens the criticality of this organizational ability. However, our results do not support the hypothesized nonlinear effect of IT capabilities, perhaps because of the context of our study. The jewelry business is not traditionally high tech; consequently, our sample may have firms that have not reached saturation in terms of IT skills. A replication of our study in a high-tech industry or with a multi-industry sample may provide for a more thorough testing of the nonlinear effect of IT capabilities.

FIGURE 2
Influence of Age-Based Learning



In terms of motivation, developing a proper mindset by stressing efficiency motives and de-emphasizing legitimacy motives is critical for firms to attain the expert state. To become experts, firms also must emphasize organizational learning (age- and effort-based). However, the positive influence of age-based learning tends to decline with age. Although effort-based learning is critical for attaining the expert state, it also tends to increase the likelihood of a firm becoming a passive participant. Overall, we find marginal support for our assertion that effort-based learning will move firms out of the exploration state.

Managerial Implications

Firms that intend to participate in electronic markets should be aware that their nature of participation is dependent not only on their IT capabilities but also on their motivation. Entering the market simply to jump on the bandwagon or establish an image of being technologically proficient does not seem to enhance activity levels in the market. Moreover, to become experts, firms should strive to achieve efficiency and work to build their IT capabilities. Allocating time and effort to learn and understand the environment also can yield substantial benefits. Firms that enter electronic markets on an experimental basis or with the desire to mimic others will most likely become passive participants. If a firm joins an electronic market to experiment, it must expend resources to achieve the objectives of its experiment.

Market makers are more likely to succeed if they provide positive network externalities for participating firms. A market maker must understand the reasons for a user firm's participation and thereby be able to provide the right incentives for these firms to adopt the market. Understanding the goals of their participating firms enables market makers to design programs that facilitate goal achievement and enhance member retention. Polygon, for example, could identify active firms and encourage them to develop their IT capabilities, as well as facilitate their learning about the environment. Passive participants might be encouraged to retain their membership for reasons that reinforce their objectives. However, convincing the passive participants to expend resources to become experts may be in the best interest of a market maker in the long run. A market maker's strategic orientation also influences the type of companies that join the market. If a market maker wants to create a market primarily with expert firms, for example, its strategic orientation and tactical actions should identify IT-capable firms whose objectives are to make the market their major sales channel.

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[6] For effort-based learning, we expect the probability that a firm will move to the expert state or the passive state to increase; thus, an important question is which of these rates is going to be higher. The literature on effort-based learning is not clear on the extent to which such learning will be successful in skill development; moreover, learning has not been studied in the context of electronic markets. However, research on the success of new ventures suggests a success rate near 50% (Golder and Tellis 1993). As an ex post exploration, we sought to compare the coefficients of effort-based learning for expert and passive states. Consistent with research on the success of new ventures, we found these coefficients to be statistically equal (b = .096, $p > .55$).

Research Implications

Our primary contribution to theory lies in developing and substantiating the existence of a typology for the nature of organizational participation. The typology helps qualify the network externality argument for the efficacy of electronic markets. This argument emphasizes that the attractiveness of a market to a user firm depends on the number of other firms (potential business partners) in the market. We find, however, that in the case of electronic markets, network externality does not depend on the total number of firms participating in the market but rather on the number of expert (and to a lesser extent, exploration) firms in the market. Thus, the passive participants must be discounted.

We also develop the construct of legitimacy motives, which, together with efficiency motives, provides a holistic theorization of organizational motivations. In addition, we contribute to the generalizability of previous case-based research on electronic markets (e.g., Hess and Kemerer 1994) by using organizational-level survey data to test our model and a representative electronic market. Similar to most electronic markets, Polygon facilitates negotiations on product specifications and terms of exchange. Polygon strives to foster a community atmosphere and is contemplating providing ratings of participating firms that would be based on their participation history. Thus, on the basis of the characteristics and scope of Polygon, we contend that our results are generalizable to other similar electronic markets.

Limitations and Further Research

Consistent with most survey research, our results are constrained by issues related to common method variance, though we tried to minimize it in two ways: (1) We assessed nonresponse bias by comparing sample characteristics with those of the population, and (2) we used secondary data to operationalize age-based learning. To our knowledge, this is the first attempt to examine organizational participation in electronic markets empirically; as a result, readers should be cautious in generalizing these results. Replications, especially in markets in which market makers adopt business models different from those of Polygon, are needed. Additional research, for example, might study firm participation in electronic markets in which a transaction fee is the primary revenue source for the market maker (e.g., e-STEEL). In electronic markets that rely on transaction fees, participation firms that do not engage in transactions do not incur any costs (other than the initial setup costs). In such cases, we believe that participating firms are even more likely to move into the passive state, and the challenges for market makers to induce active participation would be even greater. Other business models of market makers (e.g., those based on transaction or subscription fees), other characteristics of market makers (e.g., the ownership structure—consortia-led versus third-party), strategy of the market maker (e.g., exclusive markets in which entry is contingent on some qualification versus open markets), and the structure of the industry (e.g., degree of fragmentation) also should be studied.

Further research on business-to-business electronic markets should proceed in at least two directions. First, research should study user firms in electronic markets further. Researchers need to understand the role of user firm capabilities, such as market orientation and strategic adaptability, and how these important strategic variables might change in the context of electronic markets. Researchers should examine the consequences of the nature of organizational participation, such as its influence on building interfirm relationships and firm performance. In addition, researchers should develop an understanding of the drivers of firm performance and typologies of firm strategies in electronic markets. Finally, all electronic markets are international, and understanding the role of country-specific institutional environments and the implications of omnipresent global competition among user firms is critical in developing a full appreciation of the impact of electronic markets.

Second, we investigate only one electronic market and therefore cannot contribute with regard to the role of market makers in other contexts. Further research should work toward developing a taxonomy of business-to-business electronic markets, competition among electronic markets, role of market makers and their influence on the type and characteristics of user firms, the scope and context of electronic markets (e.g., generic versus industry-specific electronic markets), and international issues such as the country of origin of market makers, among others. For example, an interesting research avenue would be to investigate the factors behind the emergence and initial success of consortia-led electronic markets.

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Michael K. Brady & J. Joseph Cronin Jr.

Some New Thoughts on Conceptualizing Perceived Service Quality: A Hierarchical Approach

Through qualitative and empirical research, the authors find that the service quality construct conforms to the structure of a third-order factor model that ties service quality perceptions to distinct and actionable dimensions: outcome, interaction, and environmental quality. In turn, each has three subdimensions that define the basis of service quality perceptions. The authors further suggest that for each of these subdimensions to contribute to improved service quality perceptions, the quality received by consumers must be perceived to be reliable, responsive, and empathetic. The authors test and support this conceptualization across four service industries. They consider the research and managerial implications of the study and its limitations.

The conceptualization and measurement of service quality perceptions have been the most debated and controversial topics in the services marketing literature to date. This debate continues today, as is evident from the ongoing and largely failed attempts either to integrate the SERVQUAL/SERVPERF conceptualization into new industries (e.g., Dean 1999; Durvasula, Lysonski, and Mehta 1999; Kettinger, Lee, and Lee 1995) or to replicate its conceptual structure (e.g., Asubonteng, McCleary, and Swan 1996; Kettinger and Lee 1995; Mels, Boshoff, and Nel 1997; Robinson 1999; Van Dyke, Kappelman, and Prybutok 1997). Indeed, perceived service quality has proved to be a difficult concept to grasp. It has been referred to as "elusive" (Parasuraman, Zeithaml, and Berry 1985; Smith 1999), and research relative to the construct is still considered "unresolved" (Caruana, Ewing, and Ramaseshan 2000, p. 57) and "far from conclusive" (Athanassopoulos 2000, p. 191). A call for research that specifically examines the "dimensionality" of the service quality construct (Parasuraman, Zeithaml, and Berry 1994, p. 221) has yet to be successfully addressed.

In the literature, there has been considerable progress as to how service quality perceptions should be measured (e.g., Babakus and Boller 1992; Brown, Churchill, and Peter 1993; Cronin and Taylor 1992; Parasuraman, Zeithaml, and Berry 1985, 1988, 1991, 1994; Teas 1993) but little advance as to what should be measured. Researchers generally have adopted one of two conceptualizations. The first is the "Nordic" perspective (Grönroos 1982, 1984), which defines the dimensions of service quality in global terms as consisting of functional and technical quality. The second, the "American" perspective (Parasuraman, Zeithaml, and Berry 1988), uses terms that describe service encounter characteristics (i.e., reliability, responsiveness, empathy, assurances, and tangibles). Although the latter conceptualization dominates the literature, a consensus has not evolved as to which, if either, is the more appropriate approach. Moreover, no attempt has been made to consider how the differing conceptualizations may be related.

Although it is apparent that perceptions of service quality are based on multiple dimensions, there is no general agreement as to the nature or content of the dimensions. Two (e.g., Grönroos 1982; Lehtinen and Lehtinen 1982; Mels, Boshoff, and Nel 1997), three (e.g., Rust and Oliver 1994), five (e.g., Parasuraman, Zeithaml, and Berry 1988), and even ten (e.g., Parasuraman, Zeithaml, and Berry 1985) dimensions have been proposed. However, it is apparent that service quality evaluations are highly complex processes that may operate at several levels of abstraction (Carman 1990). The missing link appears to be a unifying theory, or conceptualization, that reflects this complexity and the hierarchical nature of the construct.

The objective of this study is to identify a new and integrated conceptualization of service quality in order to move forward with this research agenda. Given the ambiguity in the literature and the importance of developing favorable service quality perceptions among consumers (Zeithaml, Berry, and Parasuraman 1996), this new perspective is well justified.

Conceptual Background

The Origins of Service Quality Theory: The Disconfirmation Paradigm

The foundation of service quality theory lies in the product quality and customer satisfaction literature. Early conceptualizations (e.g., Grönroos 1982, 1984; Parasuraman, Zeithaml, and Berry 1985) are based on the disconfirmation paradigm employed in the physical goods literature (e.g., Cardozo 1965; Churchill and Surprenant 1982; Howard and Sheth 1969; Oliver 1977, 1980; Olshavsky and Miller 1972;

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Olson and Dover 1976). This suggests that quality results from a comparison of perceived with expected performance, as is reflected in Grönroos's (1982, 1984) seminal conceptualization of service quality that "puts the *perceived* service against the *expected* service" (Grönroos 1984, p. 37, emphasis in original). In addition to adapting the disconfirmation paradigm to the measurement of service quality, Grönroos (1982) identifies two service quality dimensions, as shown in Figure 1, Panel A. Functional quality represents how the service is delivered; that is, it defines customers' perceptions of the interactions that take place during service delivery. Technical quality reflects the outcome of the service act, or what the customer receives in the service encounter.

The disconfirmation paradigm also is the basis for Parasuraman, Zeithaml, and Berry's (1985) SERVQUAL model (see Figure 1, Panel B), which views service quality as the gap between the expected level of service and customer perceptions of the level received. Whereas Grönroos (1982) suggests two dimensions, Parasuraman, Zeithaml, and Berry (1988) propose five: the reliability, responsiveness, assurances, empathy, and tangibility characteristics of the service experience.

Alternative Conceptualizations of Service Quality

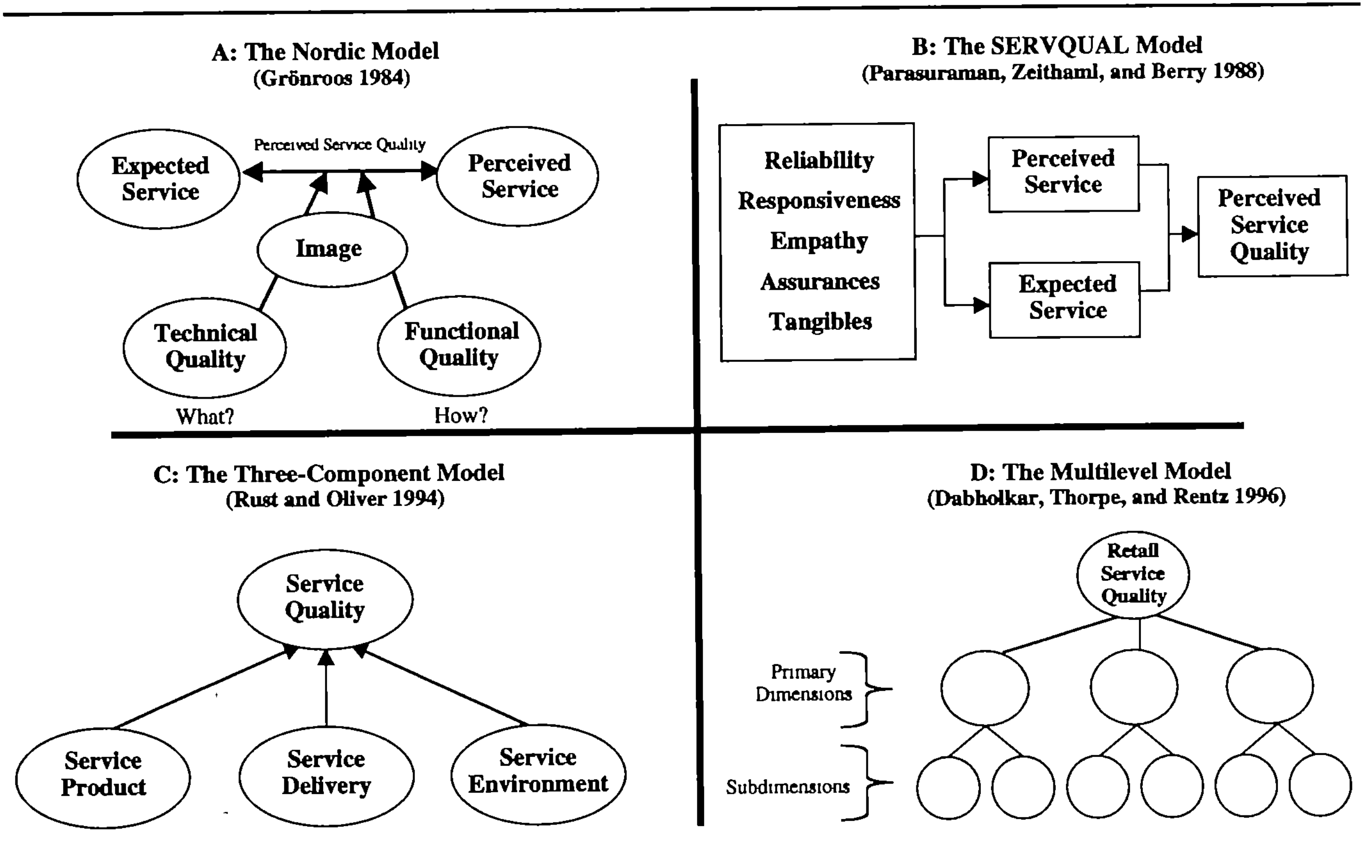
Three themes are evident in more recent work on service quality. First, several studies advance modified versions of the SERVQUAL model (e.g., Boulding et al. 1993; Cronin and Taylor 1992; DeSarbo et al. 1994; Parasuraman, Zeithaml, and Berry, 1991, 1994; Zeithaml, Berry, and Parasuraman 1996). These modifications drop expectations altogether (e.g., Cronin and Taylor 1992), add dimensions to the expectations portion of the model (such as "will" and "should" expectations; see Boulding et al. 1993), or employ alternative methods (such as conjoint analysis) to assess service quality perceptions (Carman 2000; DeSarbo et al. 1994).

A second theme involves the heightened interest in the technical and functional quality dimensions Grönroos (1982, 1984) identifies. For example, Rust and Oliver (1994) offer a three-component model: the service product (i.e., technical quality), the service delivery (i.e., functional quality), and the service environment (see Figure 1, Panel C). Rust and Oliver do not test their conceptualization, but support has been found for similar models in retail banking (McDougall and Levesque 1994) and health care samples (McAlexander, Kaldenberg, and Koenig 1994).

The third theme relates to the structure of the service quality construct. Because of the reports of SERVQUAL's inconsistent factor structure, Dabholkar, Thorpe, and Rentz (1996) identify and test a hierarchical conceptualization of retail service quality that proposes three levels: (1) customers' overall perceptions of service quality, (2) primary dimensions, and (3) subdimensions (see Figure 1, Panel D). This multilevel model recognizes the many facets and dimensions of service quality perceptions. In other words, retail service quality is viewed as a higher-order factor that is defined by two additional levels of attributes.

In summary, scholars have advanced modified versions of either Parasuraman, Zeithaml, and Berry's (1988) five-

FIGURE 1
Conceptualizations Advanced in the Literature



A: The Nordic Model (Grönroos 1984)

B: The SERVQUAL Model (Parasuraman, Zeithaml, and Berry 1988)

C: The Three-Component Model (Rust and Oliver 1994)

D: The Multilevel Model (Dabholkar, Thorpe, and Rentz 1996) factor American model or Grönroos's (1982) two-factor Nordic conceptualization (Rust and Oliver 1994). That is, service quality is defined by either or all of a customer's perception regarding (1) an organization's technical and functional quality; (2) the service product, service delivery, and service environment; or (3) the reliability, responsiveness, empathy, assurances, and tangibles associated with a service experience.

When assessed collectively, the SERVQUAL model appears to be distinct from the others because it uses terms that describe one or more determinants of a quality service encounter. In other words, the five dimensions of SERVQUAL are terms that might be used to refine some aspect of service quality. However, of major concern should be the question as to what should be reliable, responsive, empathic, assured, and tangible if service excellence is to be ensured. From a theoretical perspective, if service quality perceptions represent a latent variable, something specific must be reliable, responsive, empathetic, assured, and tangible.

We suggest that identifying this "something" is critical in the literature. Specifically, a conceptualization that recognizes the significance of the SERVQUAL factors and defines what needs to be reliable and so forth will respond to the call (e.g., McDougall and Levesque 1994; Oliver 1997) for identifying the attributes that influence service quality perceptions. Such a framework is needed if the true effects of service quality perceptions are to be better understood by both marketing researchers and practitioners.

We adopt Rust and Oliver's (1994) view that the overall perception of service quality is based on the customer's evaluation of three dimensions of the service encounter: (1) the customer–employee interaction (i.e., functional quality; see Grönroos 1982, 1984), (2) the service environment (see Bitner 1992), and (3) the outcome (i.e., technical quality; see Grönroos 1982, 1984). Given the growing support for revisiting Grönroos's seminal conceptualization (e.g., Bitner 1990; Lassar, Manolis, and Winsor 2000; Mohr and Bitner 1995; Oliver 1997; Rust and Oliver 1994) and the recent evidence that the service environment affects service quality perceptions (e.g., Baker 1986; Bitner 1990, 1992; Spangenberg, Crowley, and Henderson 1996; Wakefield, Blodgett, and Sloan 1996), a framework that incorporates these three dimensions is justified.

We also adopt the view that service quality perceptions are multilevel and multidimensional (Dabholkar, Thorpe, and Rentz 1996). Carman (1990) was perhaps the first to note that customers tend to break service quality dimensions into various subdimensions. Such a structure more fully accounts for the complexity of human perceptions (Dabholkar, Thorpe, and Rentz 1996). There is theoretical support for a multidimensional, multilevel model (e.g., Carman 1990; Czepiel, Solomon, and Surprenant 1985; Dabholkar, Thorpe, and Rentz 1996; McDougall and Levesque 1994; Mohr and Bitner 1995), but there has been little effort to identify the attributes or factors that define the subdimensions. Given the complexity of evaluating the quality of service interactions, the service environment, and the service outcome, this is a significant gap. To address this gap, we undertook the qualitative study described in the next section.

The Qualitative Study

A review of the services marketing literature reveals many examples of qualitative research. Parasuraman, Zeithaml, and Berry (1985) use it to identify dimensions for their SERVQUAL model. On the basis of a qualitative study, Bitner, Booms, and Mohr (1994) and Bitner, Booms, and Tetreault (1990) categorize various determinants of critical service encounters. Likewise, Grove and Fisk (1997) and Tax, Brown, and Chandrashekaran (1998) employ this approach to study customer interactions and service complaint handling. We use qualitative research to identify the subdimensions customers consider when evaluating the quality of the interaction, physical environment, and outcome dimensions of a service experience.

The qualitative data were obtained from responses to open-ended surveys that were administered by trained student assistants. Data collection took place over three weeks and yielded a final usable sample of 391 completed surveys. The age, sex, and income level of respondents were controlled by a quota sampling method. Respondents were asked to complete an open-ended questionnaire about the specific attributes they perceived as influences on the interactions, environments, and outcomes encountered during recent service experiences. Responses were collected across eight industries (amusement parks, full-service restaurants, health care facilities, hair salons, automobile care facilities, dry cleaning, jewelry repair, and photograph developing) and multiple service providers in each industry. The industries and providers were chosen to maximize the diversity of outlets and ensure recent use of the service by the respondents.

The respondents were encouraged to list all factors that influenced their perception of each of the three primary dimensions, with one exception. Dabholkar, Thorpe, and Rentz (1996) report that in their study, respondents regularly listed price as a factor, but the literature clearly suggests that price is a determinant of service value (e.g., Bitner and Hubbert 1994; Chang and Wildt 1994; Drew and Bolton 1987; Heskett, Sasser, and Hart 1990; Zeithaml 1988). More specifically, price is a component of sacrifice that, when combined with service quality, defines a customer's value assessment. Therefore, we followed Dabholkar, Thorpe, and Rentz's (1996) methodology in eliminating price from the decision set.

To code the data, we used an inductive categorization method that involves labeling recurring factors found in a passage of text (Spiggle 1994; Strauss and Corbin 1990). Similar processes are referred to as content analysis in the services literature (de Chernatony and Riley 1999; Tax, Brown, and Chandrashekaran 1998), and the method is used extensively in consumer behavior research to identify and document thematic relationships among various text passages (McCracken 1988; Richins 1997; Schouten and McAlexander 1995; Thompson 1997, 1999; Thompson and Hirschman 1995). In our case, three independent coders processed the survey results to identify and categorize the factors that influenced customer perceptions of the service interaction, physical environment, and service outcome. The coders were familiar with qualitative research procedures but not the marketing literature and were unaware of any a priori conceptualization. The process was therefore data driven, as the objective was to identify emergent factors from the open-ended responses (Spiggle 1994).

Coders discussed disagreements; if a resolution could not be reached, the incident counted against the reliability assessment (Kassarjian 1977). All potential subdimensions emanating from the responses were counted, but only those judged distinct from the other variables in the model were included in the conceptualization. Also, subdimensions needed to be consistently attributed to their respective primary dimensions; if a factor was listed under more than one primary dimension, it counted against the reliability estimate. Coder reliability was 89%.

The categorization yielded nine distinct subdimensions that were divided evenly among the three primary dimensions, as shown in Figure 2. Although the terms varied slightly, the factors were consistent. Moreover, a subsequent review of the literature revealed much support for the relationships identified between the factors and the primary dimensions. For example, subdimensions of interaction quality (i.e., attitude, behavior, and expertise) and physical environment quality (i.e., ambient conditions, design, and social factors) are similar to those specified in the literature (e.g., Baker 1986; Bitner 1992; Bitner, Booms, and Tetreault 1990). These qualitative results are further discussed in the section on hypotheses, along with the literature that supports the findings.

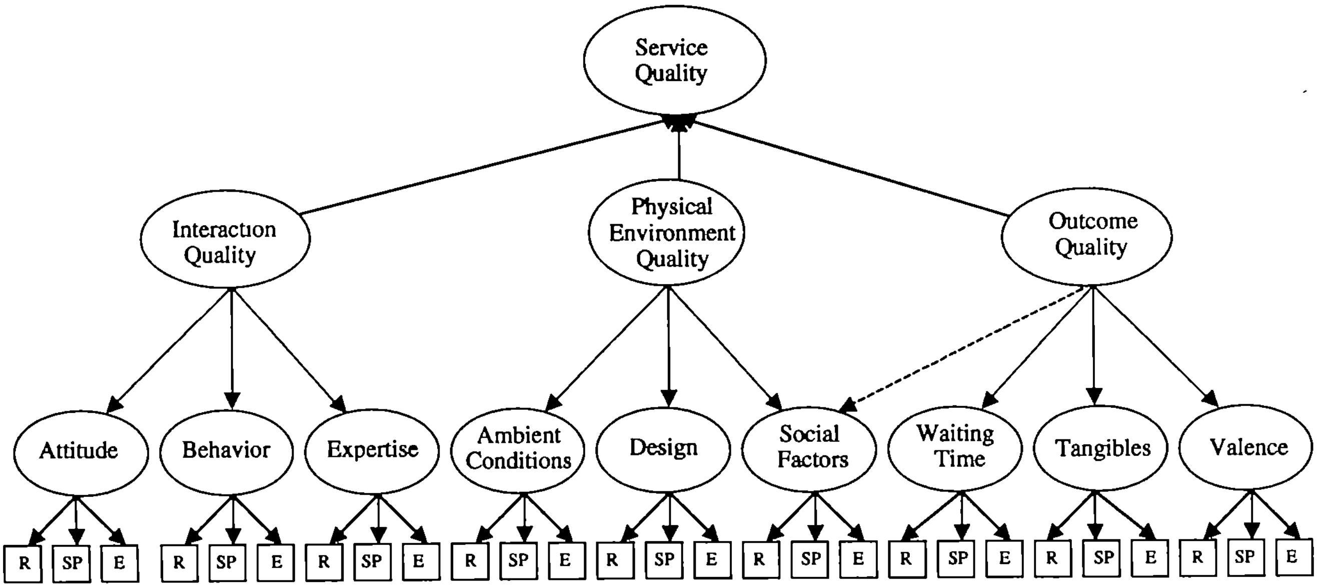
Conceptualizing Service Quality: A Hierarchical Approach

Our model suggests that each of the primary dimensions of service quality (interaction, environment, and outcome) has three subdimensions. Furthermore, customers aggregate their evaluations of the subdimensions to form their perceptions of an organization's performance on each of the three primary dimensions. Those perceptions then lead to an overall service quality perception. In other words, customers form their service quality perceptions on the basis of an evaluation of performance at multiple levels and ultimately combine these evaluations to arrive at an overall service quality perception.

In addition to the qualitative study, the work of Parasuraman, Zeithaml, and Berry (1985, 1988) was used to refine the definition of the subdimensions. There is debate about SERVQUAL's five-factor structure, but there is wide agreement that these dimensions are important aspects of quality service (Fisk, Brown, and Bitner 1993). For example, it is clear that reliable service is an important part of attaining a favorable perception of quality. Yet there are many aspects of a quality service encounter that should be reliable, such that reliability is not a clear dimension unless it is known what needs to be reliable. We maintain that the dimensionality problems with SERVQUAL/SERVPERF (Cronin and Taylor 1992; Parasuraman, Zeithaml, and Berry 1994) hinge on this issue.

We therefore reposition the SERVQUAL factors as modifiers of the nine subdimensions (see Figure 2). These subdimensions provide the necessary foundation for answering the question of what needs to be reliable, responsive, and so on. In turn, the SERVQUAL dimensions capture how consumers differentiate performance on these dimensions. In other words, they define how the subdimensions are evaluated. Undeniably, the relative importance of the SERVQUAL factors may vary across each dimension depending on individual or situational differences. That is, the SERVQUAL factors theoretically may be an important determinant of any of the nine subdimensions. This may account for the problematic factor structure of the

FIGURE 2
The Research Model



Note: R = a reliability item, SP = a responsiveness item, E = an empathy item. The broken line indicates that the path was added as part of model respecification.

SERVQUAL scale (e.g., Babakus and Boller 1992; Carman 1990; Cronin and Taylor 1992; McDougall and Levesque 1994; Parasuraman, Zeithaml, and Berry 1994; Simon 1995).

In our revised framework, the reliability, responsiveness, and empathy variables are retained, but they are not identified as direct determinants of service quality. Rather, they serve as descriptors of the nine subdimensions identified in the qualitative study. The tangibles dimension is not identified as a descriptor because of evidence that customers use tangibles as a proxy for evaluating service outcomes (Booms and Bitner 1981; McDougall and Levesque 1994). This evidence is supported by our qualitative data, because respondents regularly listed tangible elements as influencing their perceptions of service outcome quality. Therefore, tangibles are included as a subdimension of outcome quality. The assurance dimension was subsequently dropped because it did not remain distinct in factor analyses. Specifically, assurance measures have been found to load on several different factors depending on the industry context (see Babakus and Boller 1992; Carman 1990; Dabholkar, Shepherd, and Thorpe 2000; Frost and Kumar 2000; Llosa, Chandon, and Orsingher 1998; McDougall and Levesque 1994; Mels, Boshoff, and Nel 1997), and they failed to remain distinct in a pretest that was conducted as part of our research.

The conceptualization of service quality advanced here recognizes the complexity of the construct and the two seemingly conflicting perspectives advanced in the literature. We suggest that neither perspective is wrong; each is incomplete without the other. Our qualitative research identifies nine subdimensions that define the three direct determinants of service quality. Thus, these subdimensions reflect the composite set of factors customers consider when they evaluate the quality of the service interaction, environment, and outcome. On the basis of that underlying logic, we tested several hypotheses.

Hypothesis Development

Interaction Quality

> Services are often inextricably entwined with their human representatives. In many fields, a person is perceived to *be* the service.
>
> —G. Lynn Shostack (emphasis in original)

Because services are inherently intangible and characterized by inseparability (Bateson 1989; Lovelock 1981; Shostack 1977), the interpersonal interactions that take place during service delivery often have the greatest effect on service quality perceptions (Bitner, Booms, and Mohr 1994; Bowen and Schneider 1985; Grönroos 1982; Hartline and Ferrell 1996; Surprenant and Solomon 1987). These interactions have been identified as the employee–customer interface (Hartline and Ferrell 1996) and the key element in a service exchange (Czepiel 1990). Their significance is captured in Surprenant and Solomon's (1987) suggestion that service quality is more the result of processes than outcomes. Therefore, there is strong support in the literature for including an interaction dimension in the conceptualization of perceived service quality.

H_1: Perceptions of the quality of service interactions directly contribute to service quality perceptions.

Our qualitative study indicates that three distinct factors constitute customer perceptions of interaction quality. With few exceptions, the responses referred to some aspect of the attitude, behaviors, and/or expertise of the service personnel. Consider the following comment: "The staff was friendly [attitude], knowledgeable [expertise], and I was greeted as soon as I walked in the door [behavior]." Additional examples are presented in Table 1.

A review of the literature supports these factors as subdimensions of interaction quality. For example, Czepiel, Solomon, and Surprenant (1985, p. 9) suggest that the attitude, behavior (in their term, "manifest" function), and skill of service employees define the quality of the delivered service and ultimately "affect what clients evaluate as a satisfactory encounter." Similarly, Bitner, Booms, and Tetreault (1990) divide the employee–customer interaction into three distinct aspects: demeanor, actions, and skill of employees in resolving failed service incidents. Grönroos (1990) also suggests that the attitudes, behavior, and skills of employees are factored into service quality assessments. Finally, Bitner (1990) proposes that the attitudes and behavior of service personnel largely influence consumer perceptions of functional quality. She adds that these perceptions are subsequently combined with customer evaluations of technical quality and the service environment to define service quality.

H_2: Perceptions of employee attitudes directly influence the quality of service interactions.

H_3: Perceptions of employee behaviors directly influence the quality of service interactions.

H_4: Perceptions about employee expertise directly influence the quality of service interactions.

Service Environment Quality

A body of work (e.g., Baker 1986; Baker, Grewal, and Parasuraman 1994; Bitner 1990, 1992; Spangenberg, Crowley, and Henderson 1996; Wakefield, Blodgett, and Sloan 1996; Wener 1985) considers the influence of the physical or "built" environment on customer service evaluations. Because services are intangible and often require the customer to be present during the process, the surrounding environment can have a significant influence on perceptions of the overall quality of the service encounter (Bitner 1992). Research from such disciplines as marketing, environmental psychology, and sociology has been integrated into the study of the service environment, or what Bitner (1992) terms the "servicescape."

Early works in the services marketing literature exemplify the discipline's interest in how the servicescape affects consumer service evaluations. These studies indicate that it is a fundamental factor. Parasuraman, Zeithaml, and Berry (1985) were perhaps the first to identify several environmental considerations. Rys, Fredericks, and Luery (1987), in their study of restaurant patrons, find that customers infer quality on the basis of their perceptions of the physical facilities. In a cross-sectional qualitative study, Crane and Clarke (1988) report that the servicescape influences perceptions, because customers in four different service industries listed

TABLE 1
Examples from the Qualitative Research of the Nine Subdimensions as Determinants of Service Quality

Attitude
- "The receptionist seemed very snotty. The nurse and doctor were nice, but the attitude of the receptionist ruined my visit."
- "The attitude and personality of the service personnel definitely influenced my opinion. They were very friendly and warm."

Behavior
- "When I told the waitress that my order was wrong, she apologized and promptly brought over the correct order. Excellent service!"
- "The one incident that stands out in my mind was when some money had fallen out of my pocket.... The workers ran me down to give me my money back."

Expertise
- "The first person I spoke with did not seem to know much about what I needed. Even after I had finally selected the tires I wanted, he did not seem to be experienced in entering the data in the computer. My perception of the personnel was directly affected by their lack of knowledge of what they sold."
- "The service personnel really knew their jobs. They were very knowledgeable about the park and knew the answers to all of my questions."

Ambient Conditions
- "The office was peaceful and tranquil. It had nice plants all over, and they had beautiful soft music in the background that calmed my nerves a bit."
- "The photo shop was decorated with bright lights and lots of color. This caught my eye and evoked warm, comfortable feelings."

Design
- "The doctor's office was clean, but people were sitting too close to each other. Germs were spread whenever someone sneezed or coughed. But the examination rooms were spread out and private, so I felt comfortable talking to the doctor."
- "The photo processing area was located in an inconvenient area. It was at the front of the store where all of the traffic was coming in. This made it hard to organize a line."

Social Factors
- "Another factor that influenced my perception of the service surroundings was the volume of business. I equate volume with quality; the more people inside, the higher the quality of the restaurant."
- "It wasn't a pleasant experience, since everyone there was pretty unhygienic."

Waiting Time
- "The amount of time that it took to receive my car was the determining factor of my evaluation of the service outcome, which was a poor one. Even though the car was in great condition, the length of time it took to do it was unreasonable."
- "Overall I didn't like the outcome because it took the doctor only three minutes to check me, and I had to wait three hours just to see him."

Tangibles
- "The operation was a success. There were no scars."
- "The quality of the whole park left an impression on me. The food was great, all the rides were clean, and I left with some nice souvenirs."

Valence
- "I didn't like the experience because I didn't feel well. I think if I had felt better, I would have had a better time."
- "I would have had more fun if my kids had behaved better. They made it difficult for me to have a good time."

the service environment as a consideration factor in their service quality evaluations. Similar results have also been reported for patient evaluations of the service provided by their physicians (Baumgarten and Hensel 1987; McAlexander, Kaldenberg, and Koenig 1994). In view of the prominence of the environment during service delivery, it appears that the servicescape plays an integral role in the formation of service quality perceptions.

> H_5: Perceptions of the quality of the physical environment directly contribute to service quality perceptions.

Our qualitative study reveals that three factors influence the perceived quality of the physical environment: ambient conditions, facility design, and social factors (for examples, see Table 1). Ambient conditions and design factors (facility layout in Bitner 1992) are well supported by prior research (Baker 1986; Baker, Grewal, and Parasuraman 1994; Bitner 1992). Ambient conditions pertain to nonvisual aspects, such as temperature, scent, and music (Bitner 1992). Facility design refers to the layout or architecture of the environment and can be either functional (i.e., practical) or aesthetic (i.e., visually pleasing).

The last factor, social conditions, refers to the number and type of people evident in the service setting as well as their behaviors (Aubert-Gamet and Cova 1999; Grove and Fisk 1997). The negative influence of unruly crowds or the disturbance caused by a crying baby fall in this category. This factor was identified by Baker (1986), but there is disagreement over it in the literature. Bitner (1992, p. 66) suggests the term "social cues," which refer to the "signs, symbols, and artifacts" evident in the service setting that influence customer perceptions.

Our qualitative data support Baker's (1986) conceptualization, because respondents repeatedly cited social factors as influencing their perception of the service environment. In contrast, only a handful listed factors pertaining to what might be considered signs, symbols, or artifacts, and nearly all these cases were categorized under the service outcome as indicative of a tangible aspect of the service. There seems to be ample justification for including ambient, design, and social factors as underlying dimensions of the service environment.

> H_6: Perceptions of ambient conditions in the service facility directly influence the quality of the physical environment.

> H_7: Perceptions of the facility design directly influence the quality of the physical environment

H_8: Perceptions of social conditions in the service facility directly influence the quality of the physical environment.

Outcome Quality

There is consensus in the literature that the technical quality of a service encounter significantly affects customer perceptions of service quality (e.g., Carman 2000; Grönroos 1982, 1984, 1990; Rust and Oliver 1994). Grönroos (1984, p. 38) defines this factor as "what the customer is left with when the production process is finished." Czepiel, Solomon, and Surprenant (1985) refer to the technical outcome as the "actual" service and posit that it is a determinant in assessing the quality of a service encounter. Rust and Oliver (1994) refer to the service outcome as the "service product" and suggest that it is the relevant feature customers evaluate after service delivery. McAlexander, Kaldenberg, and Koenig (1994) refer to the service outcome in health care industries as "technical care" and find that it is a primary determinant of patients' service quality perceptions. Similarly, de Ruyter and Wetzels (1998) include the service outcome in their health care investigation and find a direct link to service quality. On the basis of the literature and our qualitative study, as well as its pragmatic appeal, it is reasonable to expect outcome quality to affect perceived service quality.

H_9: The service outcome directly contributes to service quality perceptions.

Marketing scholars have yet to identify attributes that define outcome quality. Grönroos (1984) and Rust and Oliver (1994) simply state that this is what the customer is left with when service is rendered. Given the lack of empirical work, we used the results of our qualitative study to identify the subdimensions of outcome quality.

Our survey indicated that waiting time influences outcome quality perceptions. In most cases, responses were negative, though a few were positive when the service delivery was especially timely. In either case, the effect of waiting on outcome quality appears strong. This has considerable support in the literature. Parasuraman, Zeithaml, and Berry (1985) find that customers identify service punctuality as an integral part of their overall evaluation. Maister (1985) reaches a similar conclusion on the basis of qualitative interviews with service personnel. Katz, Larson, and Larson (1991) and Taylor and Claxton (1994) provide empirical verification of this relationship in their studies of the effect of waiting time on bank and airline customers, respectively. Moreover, Houston, Bettencourt, and Wenger (1998) incorporate waiting time into their analysis of service encounter quality and find it to be an important predictor. Therefore, perceived waiting time is identified as a subdimension of outcome quality (see Figure 2).

It is intuitive to infer a negative relationship between waiting time and perceptions of outcome quality, but this only holds if waiting is measured in absolute time. That is, longer waiting periods have a negative effect on quality perceptions (Hui and Tse 1996; Katz, Larson, and Larson 1991; Taylor 1994). In our research, however, waiting time is not measured in absolute terms, because this would require controls associated with experimental conditions (Hui and Tse 1996). Rather, it is evaluated in a manner similar to that used by Taylor and Claxton (1994). They suggest a positive relationship: More favorable perceptions of waiting time are associated with enhanced outcome quality perceptions. We conceptualize perceived waiting time as a subdimension of outcome quality and predict a positive relationship.

H_{10}: Perceptions of waiting time directly influence service outcome quality.

Another influence on service outcome perceptions is tangible elements, which represent almost half the factors cited by respondents in the qualitative study. Theory suggests that customers use any tangible evidence of the service outcome as a proxy for judging performance (see Booms and Bitner 1981; Hurley and Estelami 1998; Shostack 1977; Zeithaml, Parasuraman, and Berry 1985). The research relating physical evidence to customer evaluations is largely based on economic signaling theory (Murray 1991), but Parasuraman, Zeithaml, and Berry (1985) show that tangible evidence is a factor that service customers consider when forming quality perceptions. Furthermore, tangibles are one of the SERVQUAL dimensions that are generally retained in factor analyses (Mels, Boshoff, and Nel 1997). On the basis of our qualitative research and the literature, we propose the following:

H_{11}: Perceptions of the tangible evidence directly influence service outcome quality.

Our qualitative research also supports the addition of valence as a determinant of outcome quality. Respondents listed various factors that reflect this dimension, which covers the essence of the service outcome above and beyond waiting time and tangibles. That is, valence captures attributes that control whether customers believe the service outcome is good or bad, regardless of their evaluation of any other aspect of the experience. For example, consider a customer who approaches a bank to inquire about a mortgage loan. Service performance may be irrelevant if the loan is not approved. Our research indicates that many of the factors that shape the valence of the outcome are outside the direct control of service management, yet they still influence perceptions of the service outcome. Other examples can occur in such services as sporting events ("We lost the game"), entertainment outlets ("The movie was disappointing"), law offices ("I lost the case"), repair services ("The damage was irreparable"), and airlines ("There was a blizzard"). In these scenarios, the customer may have a positive perception of each service quality dimension, but the negative valence of the outcome can ultimately lead to an unfavorable service experience.

The theoretical basis for incorporating valence is the general belief that service quality is similar to an attitude (Cronin and Taylor 1992; Parasuraman, Zeithaml, and Berry 1985, 1988). As such, the service outcome evaluation process is similar to that described in the attitudinal literature (Fishbein 1961, 1963; Rosenberg 1956). People's attitudes toward an object are based on a summation of their beliefs and evaluations of whether those beliefs are good or bad (Lutz 1975). This good/bad dimension is termed valence and reflects the degree to which the object of interest is considered favorable or unfavorable (Mazis, Ahtola, and Klippel 1975). On the basis of our qualitative research and theory, we conceive valence as a subdimension of outcome quality.

H_{12}: The valence of the service encounter directly influences service outcome quality.

Measures

Measures for some of the variables, such as waiting time (Taylor 1994) and tangibles (Parasuraman, Zeithaml, and Berry 1988), are identified in the literature, but these either are specific to an industry or contain potentially confounding subdimensions. It was therefore necessary to develop measures, and we followed Churchill's (1979) recommended procedure for scale development (see Parasuraman, Zeithaml, and Berry 1988).

On the basis of a review of the literature, we generated an initial pool of 59 items. We iteratively assessed the items for internal consistency (by means of coefficient alpha estimates) and factor analyzed them using convenience samples of students in undergraduate marketing classes at a large state university. We continued the process until the scales exhibited acceptable measurement properties. The result was a final group of 35 items to measure the 13 constructs in the model. Items are listed in the Appendix.

The Sample

The sample was drawn from four service industries: fast-food, photograph developing, amusement parks, and dry cleaning. These were selected because (1) each allows the customer the opportunity (albeit disproportionately) to evaluate the quality of interactions with employees, the environment, and the outcome; (2) they represent an array of service providers (Lovelock 1981); and (3) they are similar to the service industries used in other service quality research (e.g., Parasuraman, Zeithaml, and Berry 1988, 1991; Cronin and Taylor 1992). Two providers per quadrant were examined to enhance the generalizability of the results. The selection of specific firms was based both on their familiarity to the population as evidenced by responses to our qualitative survey and on their comparable service offerings.

The data were gathered in a medium-sized metropolitan area that was dominated by three state-supported universities. The survey method was self-completed questionnaires distributed at various locations. Respondents were allowed to complete only one survey and were asked to base answers on their cumulative experiences with the service provider (see the Appendix). Participants were initially screened to ensure that they had used the service within the previous 12 months. The resulting sample consisted of 1149 respondents.

To ensure authenticity of the data, 15% of the respondents (n = 175) were contacted by telephone and asked to verify selected responses to demographic questions. The surveys were also checked for obvious instances of yea-saying and incompleteness. This process eliminated less than 2% of the sample. The final sample consisted of 1133 participants. A comparison revealed that the sample closely mirrors the general population except for age (the 25–44 age group is slightly overrepresented) and education level (the sample is slightly more educated). The latter can perhaps be attributed to the presence of three universities in the area in which the survey was administered.

Assessment of the Measures

The psychometric properties of the items were evaluated through a comprehensive confirmatory factor analysis using LISREL 8. All items were tested in the same model and were restricted to load on their respective factors. Scale statistics, including intercorrelations, shared variances, and construct reliabilities, are given in Table 2. The results of the confirmatory factor analysis are presented in Table 3, along with several descriptive and diagnostic statistics (means, standard deviations, average variances extracted, parameter estimates, and t-values).

The means reported in Table 3 appear similar across constructs. However, this is somewhat misleading in that the variables were measured across the respondents' aggregate experiences and the means were reported across all four industries. When disaggregated, the means and standard

TABLE 2
Scale Statistics

Variable	INTQ	OUTQ	PHYQ	WT	TANG	VAL	ATT	BEH	EXP	AMB	DES	SOC	SQ
INTQ	**.87**	.49	.25	.14	.15	.45	.64	.59	.50	.31	.23	.30	.52
OUTQ	.70	**.90**	.36	.19	.21	.58	.52	.52	.56	.42	.29	.36	.58
PHYQ	.50	.60	**.85**	.06	.12	.37	.27	.26	.29	.64	.49	.30	.36
WT	.38	.44	.25	**.82**	.26	.26	.15	.19	.18	.08	.11	.20	.16
TANG	.39	.46	.34	.51	**.91**	.37	.14	.18	.15	.09	.10	.23	.28
VAL	.67	.76	.61	.51	.61	**.89**	.45	.50	.50	.42	.34	.42	.62
ATT	.80	.72	.52	.39	.38	.67	**.93**	.76	.61	.36	.27	.34	.50
BEH	.77	.72	.51	.44	.42	.71	.87	**.92**	.66	.35	.28	.36	.53
EXP	.71	.75	.54	.42	.39	.71	.78	.81	**.91**	.40	.30	.35	.50
AMB	.56	.65	.80	.26	.30	.65	.60	.59	.63	**.93**	.56	.36	.44
DES	.48	.54	.70	.33	.32	.58	.52	.53	.55	.75	**.85**	.41	.34
SOC	.55	.60	.55	.45	.48	.65	.58	.60	.59	.60	.64	**.72**	.49
SQ	.72	.76	.60	.49	.53	.79	.71	.73	.71	.66	.58	.70	**.90**

Notes: Intercorrelations are presented in the lower triangle of the matrix. The content reliability of each scale is depicted in boldface on the diagonal. Shared variances in percentage form are given in the upper triangle of the matrix. INTQ = interaction quality, OUTQ = outcome quality, PHYQ = physical environment quality, WT = waiting time, TANG = tangibles, VAL = valence, ATT = attitude, BEH = behavior, EXP = expertise, AMB = ambient conditions, DES = design, SOC = social factors, and SQ = service quality.

TABLE 3
Summary Measurement Results

Variable	Mean	Standard Deviation	Average Variances Extracted	Parameter Estimates	t-Values
Interaction quality	4.76	1.43	77%	.86–.90	35.23–37.47
Attitude	4.65	1.48	82%	.86–.93	36.33–41.16
Behavior	4.63	1.40	80%	.87–.91	36.88–39.42
Expertise	4.75	1.38	77%	.84–.90	34.74–38.39
Physical environment quality	4.83	1.45	84%	.90–.93	38.37–40.40
Ambient conditions	4.76	1.46	82%	.90–.92	38.71–40.12
Design	4.84	1.27	66%	.73–.87	27.56–35.39
Social factors	4.57	1.11	47%	.62–.72	22.06–26.14
Outcome quality	4.87	1.56	81%	.87–.93	36.42–40.09
Waiting time	4.84	1.37	61%	.60–.86	20.79–33.53
Tangibles	4.66	1.43	76%	.85–.90	34.91–38.16
Valence	5.12	1.32	73%	.73–.91	27.83–39.49
Service quality	4.85	1.43	81%	.87–.93	36.60–40.21

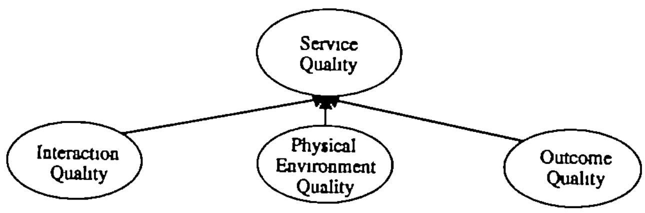
Notes: $n = 1133$; $\chi^2 = 2442$, 482 degrees of freedom; RMSR = .05; NFI = .94; CFI = .95; DELTA2 = .95; RNI = .95.

deviations were notably different both across and within service industries. For example, the amusement parks and photograph developing industries had higher means and less variation than the fast-food and dry cleaning samples. This may be a reflection of the hedonic nature of these industries. In contrast, dry cleaning had the lowest means for nearly every variable. There was also variation within the service industries. For example, the food and waiting time at one fast-food restaurant were rated much higher than those of its competitor, but the latter had a clear advantage in atmospherics. The waiting time perceptions are likely a reflection of the different queuing systems used by the two restaurants.

Because of the large sample size, the model fit was evaluated using the comparative fit index (CFI), DELTA2 (Bollen 1989), and relative noncentrality index (RNI) (McDonald and Marsh 1990), as these have been shown to be the most stable fit indices (Gerbing and Anderson 1992). Other fit indicators (chi-square, root mean square residual [RMSR] and normed fit index [NFI]) are included in Table 3 for evaluative purposes (Hu and Bentler 1999). As shown in Table 3, the results (CFI, DELTA2, RNI = .95) indicate that the comprehensive model fits the data well.

The internal consistency of the scales was assessed through the construct reliability estimates (see Fornell and Larcker 1981) reported in Table 2. The reliability estimates ranged from .72 (social factors) to .93 (attitude and ambient conditions). Convergent validity was evaluated by an examination of both the significance of the t-values and the average variances extracted (Fornell and Larcker 1981). All the t-values were significant ($p \leq .001$), and all but one of the average variance extracted estimates were greater than .50 (Fornell and Larcker 1981); the exception was social factors, which was 47%. Discriminant validity was tested by means of Fornell and Larcker's (1981) criteria, whereby the explained variance for a construct indicator (see Table 3) is compared with the shared variance (see Table 2) between the construct and the other variables in the model. The results indicate discriminant validity, because the average variance extracted by each of the scales was greater than the shared variance between the construct and all other variables.

FIGURE 3
Test of the Second-Order Factor Model



Research Methods and Results

The conceptualization depicted in Figure 2 suggests that service quality is a multidimensional, hierarchical construct. It therefore can be described as a third-order factor model suitable for testing through traditional structural equation modeling techniques. Given that our goal was to assess the proposed framework, testing the model in its entirety was a priority. Despite a lack of precedent for simultaneously analyzing a third-order factor model (Dabholkar, Thorpe, and Rentz 1996), we tested the conceptualization in a single structural model using LISREL 8. Because such a test has not been reported in the literature and because the items play a central role in this study, we performed two supplementary tests to assess further the model's structure, as shown in Figures 3 and 4. Similar to the procedure of Dabholkar, Thorpe and Rentz (1996), we first tested the primary dimensions and then tested the subdimensions. We added an analysis of the overall model to complete the three-stage design. Thus, the fit of the models determines the degree to which the items measure the same hierarchical factor as well as whether the variables depicted in Figure 2 are well supported as subdimensions of service quality (Dabholkar, Thorpe, and Rentz 1996).

The first stage of the process was to test the second-order factor model (see Figure 3). The purpose was to determine whether the three primary dimensions can be viewed as appropriate indicators of overall service quality. Because the three primary dimensions have not been empirically tested, such an analysis has added merit. The results of the first stage test, presented in Table 4, indicate that the model fits the data well (CFI, DELTA2, RNI = .99).

The second stage assessed the nine subdimensions (see Figure 4). We argue that explicit dimensions are needed to anchor the SERVQUAL factors. Accordingly, we developed 27 descriptive measures to assess the nine subdimensions. This stage tests these descriptors as well as their relevance in conceptualizing service quality. The results reported in Table 4 support these descriptive measures (CFI, DELTA2, and RNI = .93).

The results of the overall model test are also presented in Table 4 and indicate an acceptable fit to the data (CFI = .91; DELTA2, RNI = .92). Although the structural model appears to support the conceptualization, the significance of the individual paths identified in Figure 2 provides a more comprehensive test. All the paths depicted in the research model were supported, as the t-values associated with the paths were positive and significant ($p \leq .001$). For exploratory and generalization purposes, the model was also assessed on the disaggregated industry samples. The results were similar to those reported for the overall sample (CFI estimates ranged from .89 to .92 and R^2 ranged from .76 to .89), with one exception. The path from interaction quality to service quality was insignificant in the photograph developing sample. All other paths were significant and exhibited similar loadings in each of the four subsamples.

Consideration of Alternative Paths

Although the research model is well grounded and appears to be robust, the potential for model respecification needs to be considered (Anderson and Gerbing 1988). The objective is to increase the degree to which the conceptualization captures the data and, in turn, improve the validity of the conceptualization (Bentler and Chou 1987). In so doing, it is recommended that theoretical paths be avoided (Robles 1996). These are based on relationships established in the literature and should be eliminated from the respecification consideration set. Ignoring this decree is referred to as "data snooping" (Bentler and Chou 1987; MacCallum 1986) and is not a recommended practice.

In contrast, empirical paths have conceptual structures that are not yet well defined and therefore can be considered for respecification (Robles 1996). We identified several such paths. They were selected either because there is little research on these relationships (such as the valence construct) or because there is some evidence that a subdimension may influence more than one primary dimension (i.e., load on more than one factor). For example, it appears that waiting time may affect not only outcome quality but also perceptions of employee performance. Taylor (1994) and Taylor and Claxton (1994) infer that this can occur in the short run through the development of negative affect (e.g., anger, a bad mood). Therefore, a path between waiting time and interaction quality should be examined.

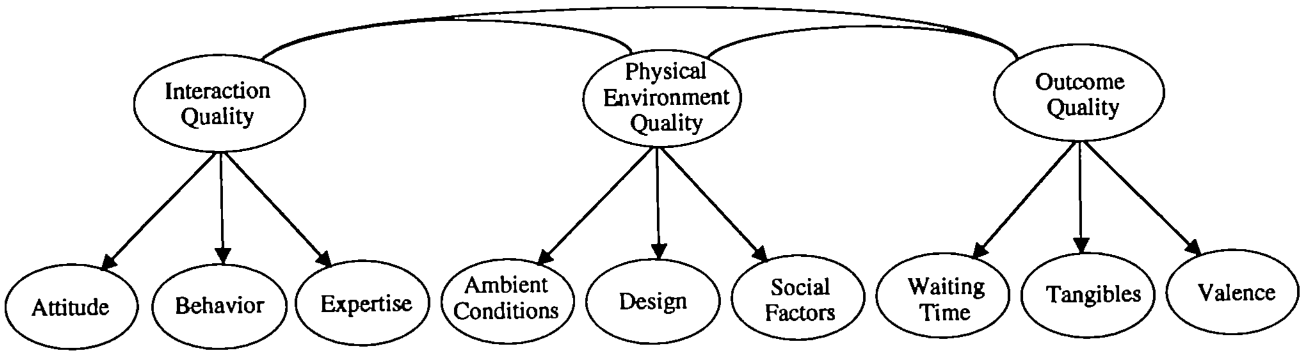
A second prospective path was identified between tangibles and physical environment quality. The servicescape literature identifies artifacts (Bitner 1992) as a possible determinant of the quality of the physical environment. As noted previously, our qualitative data support Baker's (1986) social dimension, but the path should be investigated nonetheless.

A third and fourth possible respecification was identified from Grove and Fisk's (1997) study on other customers. Their research in the amusement parks industry supports a relationship between a service firm's clientele and customer

TABLE 4
Structural Equation Results

Model (n = 1133)	χ^2	Degrees of Freedom	RMSR	NFI	CFI	Δ2	RNI
Model 1: test of the primary dimensions	67.27	14	.01	.99	.99	.99	.99
Model 2: test of the subdimensions	2260.24	312	.07	.92	.93	.93	.93
Model 3: test of the overall model	3801.38	545	.07	.90	.91	.92	.92
Model 3a: the respecified model	3604.02	544	.06	.91	.92	.92	.92

FIGURE 4
Test of the Subdimensions



perceptions of the service outcome. Moreover, their literature review indicates that this relationship may carry over to perceptions of the firm's employees, though this effect was not tested. Therefore, paths between social factors and interaction/outcome quality should also be considered.

These paths, along with several associated with valence, were added to the research model both collectively and individually (i.e., one at a time). The results were consistent across methods and industries. With one exception, the added paths were not supported because they either were insignificant or did not improve the model fit or both. The lone exception was the relationship between social factors and outcome quality (see Figure 2). This path was significant in all samples, and its addition consistently and significantly ($p \leq .001$) improved the model fit (see Table 4). Moreover, a comparison of the common parameters across the original and respecified models resulted in a correlation between the two solutions that approaches 1.00. This both supports the stability of the model and suggests that the original conceptualization was incomplete before the addition of the path (Bentler and Chou 1987).

A review of the qualitative data also provided some support for this relationship; a few comments were classified as social factors and categorized as outcome quality elements. From a practical perspective, this addition indicates that the appearance and behavior of other customers not only influence perceptions of the physical environment but also can enhance or detract from the service outcome. These results are consistent with those reported by Grove and Fisk (1997).

Discussion

Despite two decades of study and much lively debate, conceptual work on service quality can best be described as divergent. At the core of the debate are two competing perspectives, termed the Nordic and American schools (Asubonteng, McCleary, and Swan 1996; Lam and Woo 1997; Mels, Boshoff, and Nel 1997). The point of contention is that the former defines service quality using overall categorical terms, whereas the latter uses descriptive terms. Both perspectives highlight important aspects of service quality, but neither fully captures the construct. The resulting impasse has led to a call for research that reconsiders the various dimensions of service quality.

The results presented here are an effort to integrate the two schools and move forward. We provide qualitative and empirical evidence that service quality is a multidimensional, hierarchical construct. The paths in the research model are all confirmed, which indicates that each subdimension is appropriately conceived as an aspect of service quality. Collectively, it appears that these results contribute to the discipline in several areas.

First, we provide evidence that customers form service quality perceptions on the basis of their evaluations of three primary dimensions: outcome, interaction, and environmental quality. The first two are adapted from the Nordic school, in particular Grönroos's (1982, 1984) seminal idea that service quality is assessed according to customer evaluations of outcomes as well as interactions with service employees. The third primary dimension reflects the influence of the service environment on quality perceptions. Therefore, we offer the first empirical evidence for Rust and Oliver's (1994) three-component conceptualization of service quality.

Second, our qualitative and empirical results also indicate that the three primary dimensions are composed of multiple subdimensions. Customers base their evaluation of the primary dimensions on their assessment of three corresponding subfactors. The combination of all these constitutes a customer's overall perception of the quality of service. On the basis of these findings, it appears that a hierarchical conceptualization of service quality is appropriate.

Third, the results indicate that the reliability, responsiveness, and empathy of service providers are important to the provision of superior service quality, as is suggested by the American school (e.g., Parasuraman, Zeithaml, and Berry 1985, 1988). Yet we argue that these are modifiers of the subdimensions, as opposed to direct determinants. The implication is that they represent how each subdimension is evaluated (reliable or not, responsive or not, and so on), whereas the subdimensions answer the question as to what about the service should be reliable, responsive, and empathetic.

Our study achieves two important objectives. First, it consolidates multiple service quality conceptualizations into a single, comprehensive, multidimensional framework with a strong theoretical base. Second, it answers the call for a new direction in service quality research and may help alleviate the current stalemate. These advances are particularly significant because a high level of service quality is associated with several key organizational outcomes, including high market share (Buzzell and Gale 1987), improved profitability relative to competitors (Kearns and Nadler 1992), enhanced customer loyalty (Zeithaml, Berry, and Parasuraman 1996), the realization of a competitive price premium (Zeithaml, Berry, and Parasuraman 1996), and an increased probability of purchase (Zeithaml, Berry, and Parasuraman 1996).

Managerial Implications

Our model can greatly assist managers in understanding how their customers assess the quality of service experiences. Essentially, we address three basic issues: (1) what defines service quality perceptions, (2) how service quality perceptions are formed, and (3) how important it is where the service experience takes place. These three factors require managerial attention in efforts to improve consumer perceptions of service quality. Therefore, our framework can guide managers as they endeavor to enhance customers' service experiences.

The potential applications of this study are numerous. From a strategic standpoint, the conceptualization can be used to categorize customers across the nine subdimensions. Segment profiles then can be created to identify areas of core competency as well as service deficiencies. Isolating and resolving problems noted by loyal customers (Bolton 1998) and by those prone to word-of-mouth behavior (Zeithaml, Berry, and Parasuraman 1996) is especially important in view of the profit deterioration associated with even a small percentage of customer defections (Reicheld 1996). The relative performance of organizational units across the subdimensions also can be tracked. From a competitive standpoint, the identified variables can be used to compare service levels with competitors' offerings. For example, the fast-food data indicate that one competitor is a clear leader in perceptions of food quality, whereas the other derives a competitive edge from the ambience of its servicescape.

Our multilevel conceptualization is unique in that it allows for analysis at several levels of abstraction. For example, a practitioner interested in perceptions of service on a cumulative basis can use the global measures to determine an overall service quality evaluation. For researchers who focus on the quality of the primary dimensions, the six items pertaining to Rust and Oliver's (1994) conceptualization can be used as an effective service quality proxy. Or if a practitioner desires a comprehensive service quality analysis, the complete scale can be used both to determine an overall service quality assessment and to identify specific areas that are in need of attention. Analyses performed in this fashion enable managers to devote resources to improving either service quality collectively or specific aspects of the service act. This flexibility can have important implications for managers who operate in more than one service industry. As was evident in the photograph developing sample, the importance of the subdimensions can vary across service contexts (Parasuraman, Zeithaml, and Berry 1988). In that industry, the results suggest that the interaction dimension is not a key driver of service quality perceptions. Therefore, in other industries with a low level of customer–employee interaction, managers may need to concentrate only on a subset of the dimensions.

For users of SERVQUAL/SERVPERF, the findings suggest that delivering reliable, responsive, and empathetic service is indeed related to improved service quality perceptions. Of this there is little doubt, both intuitively and empirically, but the literature and this research further suggest that guidance is needed as to what is supposed to be reliable and so on. We have identified nine constructs that answer this question. With this kind of focused information, managers not only can diagnose service failures but also can isolate their origins. For example, the SERVQUAL/SERPERF items would convey that one or more aspects of the service delivery are unreliable or unresponsive or lack empathy. Alternatively, our conceptualization not only can identify waiting time as the problem but also can indicate (1) whether waiting time is consistent, (2) whether efforts are being made to minimize the wait, and/or (3) whether the company recognizes customers' time constraints. An explicit and actionable remedy then can be devised.

Research Implications

There are several implications for further research. The most obvious extension is to investigate the interrelationships between service quality and other service constructs. The discipline has made great strides in understanding the relationships between service quality and expectations, satisfaction, and service value, but additional work is needed. In particular, there is a notable lack of discriminant validity between measures of perceived service quality and customer satisfaction. Determining whether our conceptualization can help overcome this problem should be of great interest to researchers. Moreover, any improvement in the ability to capture service quality perceptions will enhance the understanding of service value. Specifically, value attributions are defined in part by what a customer "gets" from a service experience. A more complete representation of service quality improves the ability of researchers to capture this portion of consumers' value attributions.

Given the interest in investigating internal service quality (Bitner, Booms, and Tetreault 1990; Brown and Swartz 1989; Frost and Kumar 2000; Parasuraman, Zeithaml, and Berry 1988), our conceptualization could be extended to analyze service quality from an employee perspective. Indeed, Parasuraman, Zeithaml, and Berry (1988) argue that overall service quality measures can easily be adapted to serve in such a fashion.

Further work investigating valence as a subdimension of service quality is needed. Our findings indicate that the valence of the service outcome can have an effect on overall perceptions of service quality. Because the factors driving valence tend to be beyond the control of service managers (e.g., bad weather, bad credit, the wrong verdict), more research is needed to identify possible strategies for counteracting these effects. It may be that one or more of the other subdimensions help neutralize negative valence. For example, exceptionally friendly service or a particularly attractive setting might outweigh these effects. The loyal support of athletic teams such as the Chicago Cubs and Boston Red Sox is a testament to this potential. Revenue generation for these franchises is insulated from the performance of the team largely by the tradition and atmosphere of their stadiums (i.e., the physical environment).

Finally, the scale developed in this study can be used to examine each primary dimension of service quality in greater depth. The literature review suggests that relatively few scholars have empirically analyzed the quality of the customer–employee interaction, the service environment, and the service outcome. Moreover, our findings indicate that the importance of the dimensions may vary depending on industry characteristics. Future studies could employ the items to investigate each construct more fully or even the interactions among the set. Questions remain as to whether customer perceptions of the quality of interactions, the service environment, or outcomes dominate overall service quality perceptions, as well as such issues as customer willingness to revisit or offer positive word-of-mouth endorsements. Our model can facilitate these and other research efforts.

Limitations

As does any research project, our study has some limitations. The four services tested account for only a small portion of service industries, which makes generalizing the results risky. Also, the 12-month interval in data collection may have influenced the variance in responses and therefore should be considered a limitation. In addition, although the measures used in the study perform well in multiple tests and across several industries, further analysis of the items is needed in other contexts to establish more definitive proof of reliability and validity.

Finally, our conceptualization is intended as a global view of service quality. Our goal was to develop a model that identifies the structure and factors considered when customers evaluate a typical service encounter and, in so doing, offer a unifying theory that draws from the literature to date.

Yet we acknowledge that it may be impossible to develop a model that is equally applicable across all service industries. For example, highly automated services (e.g., remote services) would require the evaluation of only a subset of the factors discussed here (i.e., remote services have little or no customer–employee interaction). We therefore stress that modifications of this conceptualization to account for industry-specific factors are critical.

Appendix
The Survey Items

All items were scored on a seven-point Likert scale (1 = "strongly disagree," 7 = "strongly agree"). In the following items, r indicates a reliability item, sp indicates a responsiveness item, and em indicates an empathy item.

Interaction Quality

Overall, I'd say the quality of my interaction with this firm's employees is excellent.

I would say that the quality of my interaction with XYZ's employees is high.

Attitude

You can count on the employees at XYZ being friendly (r).

The attitude of XYZ's employees demonstrates their willingness to help me (sp).

The attitude of XYZ's employees shows me that they understand my needs (em).

Behavior

I can count on XYZ's employees taking actions to address my needs (r).

XYZ's employees respond quickly to my needs (sp).

The behavior of XYZ's employees indicates to me that they understand my needs (em).

Expertise

You can count on XYZ's employees knowing their jobs (r).

XYZ employees are able to answer my questions quickly (sp).

The employees understand that I rely on their knowledge to meet my needs (em).

Service Environment Quality

I would say that XYZ's physical environment is one of the best in its industry.

I would rate XYZ's physical environment highly.

Ambient Conditions

At XYZ, you can rely on there being a good atmosphere (r).

XYZ's ambiance is what I'm looking for in a ________ (sp).

XYZ understands that its atmosphere is important to me (em).

Design

This service provider's layout never fails to impress me (r).

XYZ's layout serves my purposes (sp).

XYZ understands that the design of its facility is important to me (em).

Social Factors

I find that XYZ's other customers consistently leave me with a good impression of its service (r).

XYZ's other customers do not affect its ability to provide me with good service (sp).

XYZ understands that other patrons affect my perception of its service (em).

Outcome Quality

I always have an excellent experience when I visit XYZ.

I feel good about what XYZ provides to its customers.

Waiting Time

Waiting time at XYZ is predictable (r).

XYZ tries to keep my waiting time to a minimum (sp).

This service provider understands that waiting time is important to me (em).

Tangibles

I am consistently pleased with the ________ at XYZ (r).

I like XYZ because it has the ________ that I want (sp).

XYZ knows the kind of ________ its customers are looking for (em).

Valence

Directions: These questions refer to whether you think the outcome of your experience was good or bad. Please choose the number which best reflects your perception of whether your experience was good or bad.

When I leave XYZ, I usually feel that I had a good experience (r).

I believe XYZ tries to give me a good experience (sp).

I believe XYZ knows the type of experience its customers want (em).

Service Quality

I would say that XYZ provides superior service.

I believe XYZ offers excellent service.

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Peter Boatwright & Joseph C. Nunes

Reducing Assortment: An Attribute-Based Approach

Most supermarket categories are cluttered with items, or stockkeeping units (SKUs), that differ very little at the attribute level. Previous research has found that reductions (up to 54%) in the number of low-selling SKUs need not affect perceptions of variety and therefore sales, significantly. In this research, the authors analyze data from a natural experiment conducted by an online grocer, in which 94% of the categories experienced dramatic cuts in the number of SKUs offered, particularly low-selling SKUs. Sales were indeed affected dramatically, increasing an average of 11% across the 42 categories examined. Sales rose in more than two-thirds of these categories, nearly half of which experienced an increase of 10% or more; 75% of households increased their overall expenditures after the cut in SKUs. In turn, the authors examine how different types of SKU reductions—defined by how the cuts affect the available attributes or features of a category (e.g., the number of brands)—affected purchase behavior differently. The results indicate that consumers experienced divergent reactions to the reduction in sizes, but they uniformly welcomed the elimination of clutter brought on by the reduction in redundant items. In addition, of households that were loyal to a single brand, size, or brand–size combination that was eliminated, nearly half continued purchasing within the category. Also, contrary to previous research on SKU reductions, the authors find that category sales depend on the total number of SKUs offered. The authors extend the previous research by showing that (1) category sales depend on the availability of key product and category attributes and (2) two particularly important attributes to consumers in an assortment are brand and flavor.

Regarding product assortment, the conventional wisdom among supermarket managers has been that "more is better." Consequently, the average number of stockkeeping units (SKUs) at a supermarket has grown from 6000 a generation ago to more than 30,000 items today (Drèze, Hoch, and Purk 1994; Food Marketing Institute 1993). Recognizing that a reduction in SKUs can clear away clutter and lower costs, grocery retailers have been under immense pressure in recent years to begin offering a more efficient assortment by simply eliminating the low- or nonselling items within a category. Yet retailers are generally reluctant to cut items for fear of losing consumers who will be unhappy with their offerings.

Most grocers realize that consumers often prefer stores that carry large assortments of products for several reasons (Arnold, Oum, and Tigert 1983). For one, the larger the selection, the more likely consumers are to find a product that matches their exact specifications (Baumol and Ide 1956). In addition, more products mean more flexibility, which is important if the consumer has uncertain preferences (Kahn and Lehmann 1991; Koopmans 1964; Kreps 1979; Reibstein, Youngblood, and Fromkin 1975) or is predisposed to variety seeking (Berlyne 1960; Helson 1964; Kahn 1995; McAlister and Pessemier 1982).

Recent research, however, suggests that consumer choice is affected by the perception of variety among a selection, which depends on more than just the number of distinct products on the shelves. The consumer's perception of variety can be influenced by the space devoted to the category, the presence or absence of the consumer's favorite item (Broniarczyk, Hoyer, and McAlister 1998), the arrangement of an assortment and the repetition of items (Hoch, Bradlow, and Wansink 1999), and the number of acceptable alternatives (Kahn and Lehmann 1991). Therefore, many observers in industry and academia believe that, if they do it properly, grocers can make sizable reductions in the number of SKUs offered without negatively affecting sales. In a study by Drèze, Hoch, and Purk (1994), aggregate sales went up nearly 4% in eight test categories after experimenters deleted 10% of the less popular SKUs and dedicated more shelf space to high-selling items. This experiment lasted 16 weeks and tracked sales at 30 test stores and 30 control stores.[1]

Broniarczyk, Hoyer, and McAlister (1998) examine the link between the number of items offered, assortment from the consumer's perspective, and sales. They find that reductions (up to 54%) in the number of low-selling SKUs need

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[1] In addition, an industry study by the Food Marketing Institute (1993) examined reductions in SKUs in six categories (toothpaste, salad dressing, toilet tissue, pet food, cereal, and spaghetti sauce) at eight stores of three participating supermarkets (24 stores in total). Items deemed duplicates were cut, yet shelf space remained constant and was allocated to high-volume products. The depths of cuts (the precise levels of which are unreported) were "limited," "recommended," or "extreme." The recommended level of cuts led to an increase in sales of 2%, but more extreme cuts reportedly led to a .76% reduction in sales.

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not affect perceptions of variety and therefore sales. In a field study, the researchers eliminated approximately half of the low-selling items in five categories (candy, beer, soft drinks, salty snacks, and cigarettes) in two test convenience stores while holding shelf space constant. Neither sales nor consumers' perceptions of variety differed significantly between two test stores and two control stores. As Broniarczyk, Hoyer, and McAlister (1998, p. 175) point out, however, their findings are limited by the extent to which their results would generalize to other categories and how the specific features of the category might make consumers more or less sensitive to SKU reductions (e.g., a category with a small number of brands). This research addresses both of these issues directly.

First and foremost, we examine how different types of SKU reductions—defined by how they affect the attributes available in a category (i.e., the number of brands, sizes, and flavors)—affect sales differently. Fader and Hardie (1996, p. 451) pose the question, "Is it sufficient to drop the lowest-selling items or is it wiser to eliminate all items sharing an ineffective SKU attribute level?" Few retailers would eliminate any item that is selling briskly, but category managers must wonder whether all low-selling SKUs can be cut with equal (or lack of equal) impact on sales and, if not, which SKUs should be the first to go. We believe that the answer can be found by tracking changes in attribute offerings. To date, no work we are aware of has examined the effect on sales resulting from different types of SKU reductions or, more specifically, cuts based on product characteristics other than being low- or nonselling.

Second, although the increases in sales were not significant at Broniarczyk, Hoyer, and McAlister's (1998) test stores, our results are similar to Drèze, Hoch, and Purk's (1994) in that sales can change significantly following a reduction in the number of SKUs offered (see Figure 1 and Table 1). Unlike Drèze, Hoch, and Purk (1994), who found that aggregate sales went up nearly 4% in 8 categories, we observed an average sales increase of 11% across the 42 categories we examined. In 35 categories, sales changed by more than 4%, and nearly half of all categories experienced an increase of 10% or more. Our research is the first to examine how these changes depend on the particular nature of the cuts (i.e., which attributes were affected). Our model finds that the resulting change in sales depends on how the reduction in items affects the features of the category (i.e., the availability of alternative attributes such as brands and flavors). Our model also allows for divergent consumer reactions to the assortment reduction, measuring not just the results for the average consumer but also the percentage of consumers who embrace (or reject) different aspects of the change in assortment.

Third, our results indicate that even while sales increased, purchase probabilities decreased slightly. Not all consumers welcomed a reduction in their selection, and these consumers stopped purchasing or purchased less frequently. But the majority of consumers bought larger quantities, and their increased purchases easily outweighed the loss in sales due to the minority that preferred the greater selection. Even so, our results raise questions about customer retention, and we therefore investigate why some households ceased purchasing in some categories. Although we document that customers who lose their favorite brand are likely to stop or reduce category purchases, we find that a large percentage (nearly 40%) of consumers who were

FIGURE 1
Effect of SKU Reduction on Sales

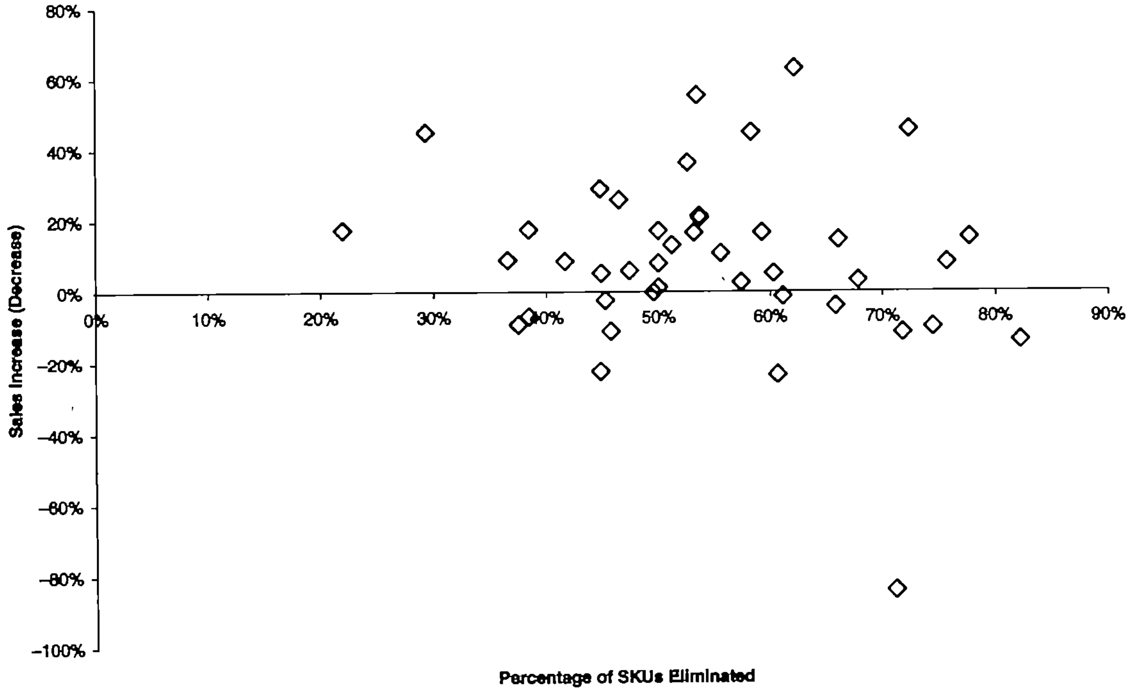


TABLE 1
Summary of SKU Reductions

Category	Items	Market Share	Brand	Size	Flavor	Brand–Size
	Percent Reductions of					
Cat food	22%	13%	15%	33%	27%	35%
Baby food	29	13	29	30	17	25
Facial tissue	37	20	17	25		31
Water	38	18	29	20		36
Tuna	38	29	0	36	0	38
Butter	38	3	25	0		20
Low-fat milk	42	3	50	20	0	44
Long-life milk	45	10	14	0		29
Laundry detergent	45	17	28	39		38
Soup	45	18	27	14	38	23
Milk	45	10	44	0	0	35
Flavored water	46	12	50	30	24	50
Paper towels	47	43	31	0		39
Bread	47	23	37	12	37	39
Cereal	50	24	55	16	31	41
Dish soap	50	37	0	40		47
Orange juice	50	10	50	33	0	56
Eggs	50	4	71	33	0	67
Waffles	51	40	40	43	23	47
Plastic bags	53	34	33	31		46
Frozen dinners	53	23	37	29		38
Refrigerated pasta	53	20	25	0	50	20
Soda/pop	54	25	29	54	40	46
Diet/sugar-free pop	54	21	27	50	37	47
Breakfast bars	56	14	33	33	35	41
Yogurt	57	29	27	33	54	29
Garbage bags	58	25	57	60		63
Coffee	59	38	38	26	67	39
Pasta	60	36	61	50	0	53
Cigarettes	61	42	53	0	0	53
Toilet paper	61	54	14	29		50
Cat litter	62	47	31	20		50
Juices	66	32	67	43	64	50
Crackers	66	40	56	41	58	53
Shredded cheese	68	52	40	33	25	50
Candy	71	27	45	58	45	67
Spaghetti sauce	72	47	67	68	50	74
Ice cream bars	72	42	45	53	58	66
Chunk cheese	74	55	40	42	53	50
Ice cream	76	42	40	0	66	61
Cookies	78	44	61	54	60	69
Diapers	82	62	50	61		74
Average	54	28	38	31	33	46

extremely loyal to a single brand continued to purchase in the category after that brand was eliminated.

Our investigation differs from previous work for several other important reasons. First, the data come from a retailer that (1) cut the number of SKUs offered in almost all categories (383 of 407 categories) and (2) implemented these cuts indefinitely. Second, the data come from an online grocer, which enables us to track the purchase behavior of a large, stable panel of regular shoppers who made purchases both before and after the reduction. These shoppers all made real purchase decisions with their own real dollars. Third, the purchase history of a much larger control panel of online customers, for whom the assortment did not change, provided a base for comparison. This control group's purchase data came from consumers in the same market during the same time period.

We should be clear about the objectives of this research up front. We do not attempt to measure consumers' perceptions of assortment, nor do we address issues related to shelf space allocation and product display. Instead, our primary goal is to explore how different types of SKU reductions affect category sales differently. Fader and Hardie (1996, p. 450) have argued that individual SKUs can be described in terms of a small set of discrete attributes and that "consumer choice is often made on the basis of these attributes." If the consumer views the category in terms of its attributes, we believe that the marketer should pay attention to changes in the availability of options among the attributes within a category. By monitoring how additions and deletions affect the presence or absence of attribute options, we believe that managers can better anticipate how category sales will respond to changes in SKU offerings and thus fine-tune their selection of SKUs in a more profitable manner. Our model tests how various changes in the availability of options among meaningful attributes, which are brought on by changes in product offerings, affect category sales.

We also believe that an understanding of which attributes are meaningful to consumers can help explain how different types of SKU reductions can affect category sales differently. Our secondary goal is to determine which attributes, if any, are meaningful across a wide variety of categories and are susceptible to changes that have a direct impact on assortment. Just as we believe that attributes should matter, we believe that not all attributes should matter equally. We recognize that a reduction in the availability of certain attributes could have a positive or negative effect and that the direction probably depends on the number of options originally offered within a category. It stands to reason, however, that changes in the availability of meaningless attributes will have no significant effect on category sales, whereas the magnitude of the effect of meaningful attributes will differ. For this work, we chose only attributes we believed would be meaningful in the vast majority of categories, yet we still expect that some will be more meaningful than others.

The rest of this article is organized as follows: In the next section, we briefly discuss how we selected the particular attributes we test. We then describe the data in more detail and explain why they are remarkably appropriate for this research. In the section that follows, we specify our measures and outline the development of a formal model that is used to examine how the particular nature of different SKU cuts affects sales differently. The results suggest that changes in category sales can be explained by changes in the availability of attributes. Finally, we discuss some secondary findings and the noteworthy managerial implications that emerge from these results. We conclude by reviewing some limitations of this work and offering suggestions for further research.

Meaningful Attributes

The first step in our analysis was to determine what would be treated as an SKU attribute. Marketing research firms typically use three important criteria (Fader and Hardie 1996). First, an SKU attribute must be consumer recognizable, that is, immediately observable to the consumer. Second, it must be objective, or precise. Third, it must be collectively exhaustive; in other words, it must apply to every SKU in the category.

At the onset, we attempted to be as inclusive as possible, yet the nature of the research, which examines issues that affect all categories, required that the attributes we chose transcend product categories. For this reason, we began by including brand, size, flavor, package, and form, all five of the key product characteristics articulated by the Food Marketing Institute in its 1993 report on variety and duplication. None of the categories examined included a significant number of different packages (e.g., Marlboro soft versus hard pack) or forms (e.g., Grape Nuts versus Grape Nut flakes), and therefore the categories could not experience significant changes along these attributes. Consequently, the three SKU attributes included in our final analysis were brand, size, and flavor. These attributes conveniently mimic the product descriptions onscreen at most online grocers (see Figure 2) as well as those Broniarczyk, Hoyer, and McAlister (1998) mention in their discussion of the cognitive aspects of assortment perceptions.

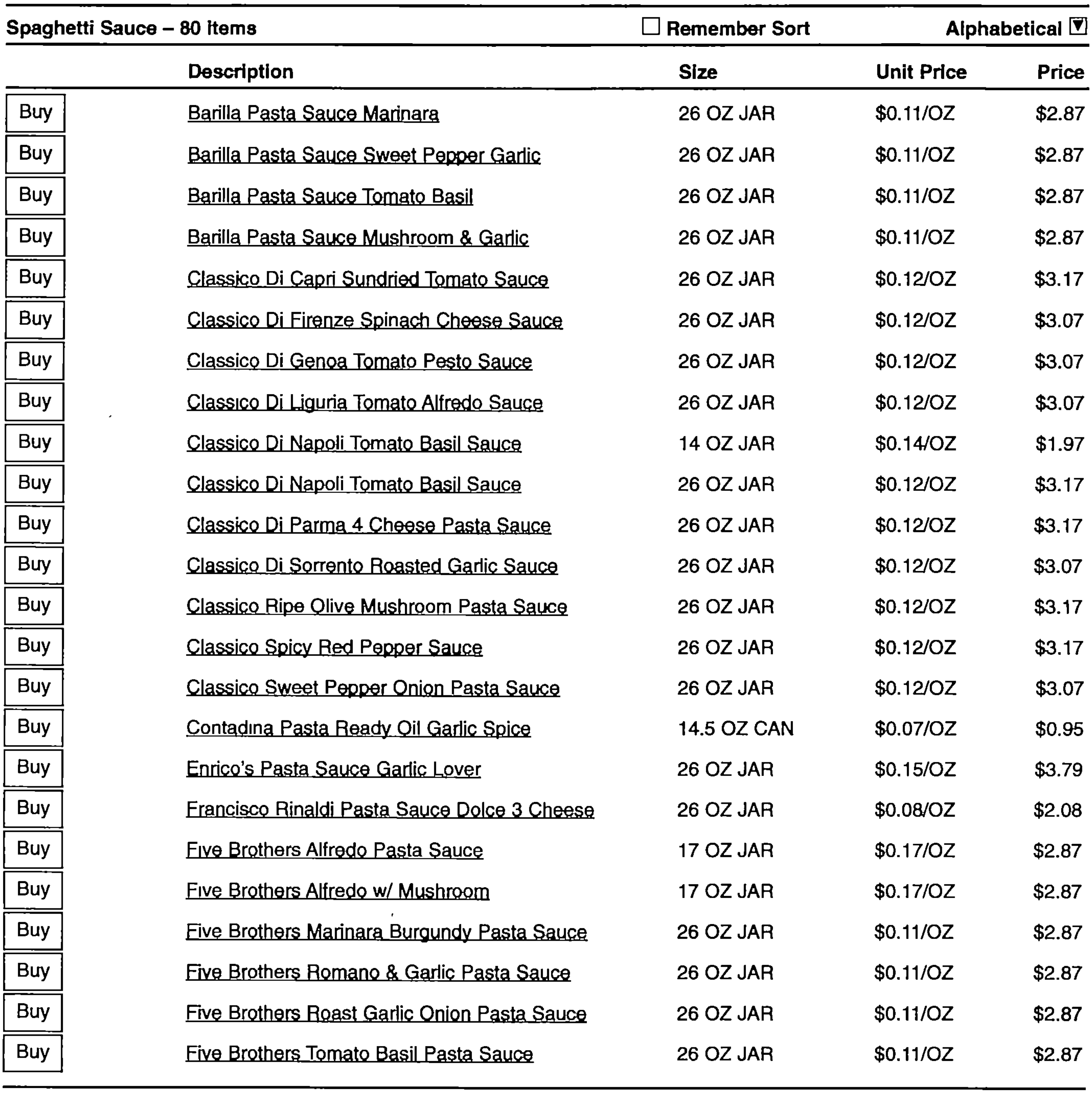
Not every product cut will lead to the elimination of a brand, size, or flavor. Merchandise managers might purposefully or inadvertently eliminate entire brands and sizes from a selection, or they might just trim several specific brand–size combinations. For example, if 12-packs of Sprite are eliminated but the consumer can still get 12-packs of alternative sodas (e.g., 7UP) and other sizes of Sprite (e.g., 2-liter bottles), then only a specific brand–size combination was cut; the brand and size themselves are still available. The total number of brand–size combinations cut could be viewed as indicative of a reduction in redundant items as long as no brands or sizes are eliminated. Consequently, we expect these types of cuts to have a positive effect on sales, because eliminating clutter makes it easier for consumers to find what they are looking for. If too much choice is truly demotivating (Iyengar and Lepper 1998), eliminating redundant items should help boost category sales (a simple positive relationship).

In addition, we included a variable that indicated the percentage of total items cut within each category. Unlike previous research that included either one level (10% in Drèze, Hoch, and Purk's [1994] work) or low, moderate, and high levels of cuts (25%, 50%, and 75% in Broniarczyk, Hoyer, and McAlister's [1998] work), the categories in our data experienced 27 different levels of reductions. Although this variable is identical in its operationalization to previous research, we recognize that it incorporates many of the differences among products that are specific to a particular category. For example, the Bounty brand of paper towels comes in white, medley, or fun prints. Strictly speaking, pattern is neither a package or form (e.g., extra strength, shorter sheets) difference, but if cut, a unique attribute disappears from the assortment. Consequently, we would expect a change in the number of items to be correlated with a change in sales (i.e., unexplained variance) because of these types of product distinctions disappearing. These attributes differ by category, occur in small numbers, and may or may not be valued by consumers. Therefore, a priori, we cannot predict the effect of item cuts on sales. We test the effect of varying degrees of cuts among brands, sizes, flavors, items, and brand–size combinations with data from a natural experiment that was conducted independently by an online grocer.

The Data

Electronic commerce has begun to change the nature and economics of food marketing radically as millions of computer-savvy consumers have begun shopping for groceries online. At the time of the experiment, 435,000 of the 53.5 million U.S. consumers online had purchased food products over the Internet, and a study by Anderson Consulting predicted that the online market for groceries and related products would reach $85 billion by 2007 (Thompson 1998). Most online grocers were reliant on the professional shop-

FIGURE 2
Typical Display at an Online Grocer: Sample from the Spaghetti Sauce Aisle



Spaghetti Sauce – 80 Items ☐ **Remember Sort** **Alphabetical ▼**

	Description	Size	Unit Price	Price
Buy	Barilla Pasta Sauce Marinara	26 OZ JAR	$0.11/OZ	$2.87
Buy	Barilla Pasta Sauce Sweet Pepper Garlic	26 OZ JAR	$0.11/OZ	$2.87
Buy	Barilla Pasta Sauce Tomato Basil	26 OZ JAR	$0.11/OZ	$2.87
Buy	Barilla Pasta Sauce Mushroom & Garlic	26 OZ JAR	$0.11/OZ	$2.87
Buy	Classico Di Capri Sundried Tomato Sauce	26 OZ JAR	$0.12/OZ	$3.17
Buy	Classico Di Firenze Spinach Cheese Sauce	26 OZ JAR	$0.12/OZ	$3.07
Buy	Classico Di Genoa Tomato Pesto Sauce	26 OZ JAR	$0.12/OZ	$3.07
Buy	Classico Di Liguria Tomato Alfredo Sauce	26 OZ JAR	$0.12/OZ	$3.07
Buy	Classico Di Napoli Tomato Basil Sauce	14 OZ JAR	$0.14/OZ	$1.97
Buy	Classico Di Napoli Tomato Basil Sauce	26 OZ JAR	$0.12/OZ	$3.17
Buy	Classico Di Parma 4 Cheese Pasta Sauce	26 OZ JAR	$0.12/OZ	$3.17
Buy	Classico Di Sorrento Roasted Garlic Sauce	26 OZ JAR	$0.12/OZ	$3.07
Buy	Classico Ripe Olive Mushroom Pasta Sauce	26 OZ JAR	$0.12/OZ	$3.17
Buy	Classico Spicy Red Pepper Sauce	26 OZ JAR	$0.12/OZ	$3.17
Buy	Classico Sweet Pepper Onion Pasta Sauce	26 OZ JAR	$0.12/OZ	$3.07
Buy	Contadina Pasta Ready Oil Garlic Spice	14.5 OZ CAN	$0.07/OZ	$0.95
Buy	Enrico's Pasta Sauce Garlic Lover	26 OZ JAR	$0.15/OZ	$3.79
Buy	Francisco Rinaldi Pasta Sauce Dolce 3 Cheese	26 OZ JAR	$0.08/OZ	$2.08
Buy	Five Brothers Alfredo Pasta Sauce	17 OZ JAR	$0.17/OZ	$2.87
Buy	Five Brothers Alfredo w/ Mushroom	17 OZ JAR	$0.17/OZ	$2.87
Buy	Five Brothers Marinara Burgundy Pasta Sauce	26 OZ JAR	$0.11/OZ	$2.87
Buy	Five Brothers Romano & Garlic Pasta Sauce	26 OZ JAR	$0.11/OZ	$2.87
Buy	Five Brothers Roast Garlic Onion Pasta Sauce	26 OZ JAR	$0.11/OZ	$2.87
Buy	Five Brothers Tomato Basil Pasta Sauce	26 OZ JAR	$0.11/OZ	$2.87

pers they hired to pick up items that were ordered for delivery at a local supermarket. This system contributed to above-average operating expenses, which hovered between 12 and 23% in 1998. Online grocers needed to cut costs desperately, and most planned to do so by moving to a system with central warehouses and bin shelving, where a severe reduction in the number of SKUs was seen as essential and inevitable. Industry analysts and executives agreed that the product offerings at online grocers should be cut roughly in half (Food Marketing Institute 1997).

In November 1996, a national online grocer began servicing a major market on the east coast. For eight months, all of its customers were offered the exact same selection online as was available at a local, affiliated grocery chain. In July 1997, this grocer undertook an enormous experiment, severely reducing the number of products available to a test panel or experimental group of consumers.[2] The company simultaneously monitored the purchases of everyone else in the market (i.e., the control group), for whom the assortment remained unaltered. The reduction did not appear to affect attrition; only 9 of the 292 (3%) active consumers in the experimental group quit the service. In the control group, 28 of the 455 (6%) customers quit.

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[2] This test panel consists of 292 active consumers, where "active" means that (1) the consumers placed at least five orders in the eight months prior to the SKU reduction and (2) the consumers had not cancelled their service before the month for which we calculated category sales.

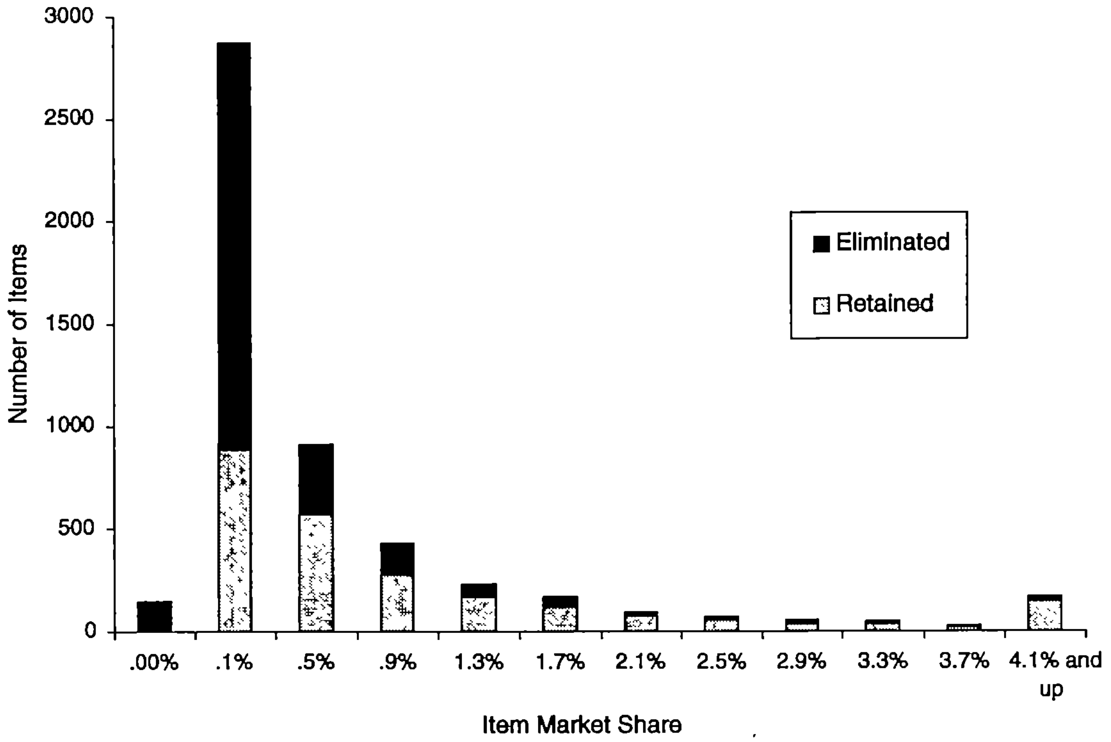
In January 1998, the company provided the authors with all the recorded information for 1997 (e.g., SKU, quantity, date of purchase, unit price, shopping basket) for both panels. Accordingly, we compared purchases made by households in the two groups for six months before and five months after the SKU reduction.[3] To measure the effect of the SKU reduction on sales within a category, we modeled dollar sales to individuals in the experimental group compared with sales to a control group. The use of a control group increases the reliability of the statistical results and simplifies the analysis by establishing credible purchasing baselines and eliminating the need for a large number of covariates. Because we compare data from identical time periods for the two consumer panels, we do not need to account separately for any effect on sales caused by holidays (e.g., Thanksgiving), seasons (e.g., summer), or any other variables (e.g., price changes) that we can assume affected both panels equally. In addition, the simplified shopping environment online (no shelves, no lines, and so forth) offers a unique opportunity to explore assortment as a separate issue from these complexities.

To make the task more manageable, the analysis focused on 42 of the 47 top-selling categories, each of which had at least $5,000 in sales for the period in question.[4] On average, the households in the test panel shopped online 1.56 times per month and spent $72.32 dollars per shopping "trip" among just those 42 categories examined. Within these categories, the test panel placed 5924 separate orders for 135,979 items (an average of 23 items per order). The panel chose among 4181 SKUs for the period before the cut versus 1852 SKUs afterwards (a 56% reduction). As might be expected, the 2329 SKUs eliminated were mainly small-share items (see Figure 3). Individual categories lost between 20 and 80% of the products previously offered (see Table 1); none of the 42 categories was eliminated entirely. This variance helps provide a rich source of real-world data on consumers' reactions to a broad spectrum of different types of SKU reductions.

Measures and the Model

In this experiment, the assortment was simultaneously altered in a large number of categories. At the most basic level, our model compares sales before and after the manipulation, which is the format for the standard t-test for the difference in group means. Although the t-test offers a nice conceptualization of our model, the t-test itself is simplistic.

FIGURE 3
Market Shares of Retained and Eliminated Items



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[3] Although we have data for the test panel for November and December of 1996, our control panel data exclude these two months. We therefore restrict our analysis to overlapping time periods (i.e., 1997). Also, purchases for July, the transition month, were excluded from the analysis.

[4] The top 47 categories each included more than $5,000 in sales during the period in question. The categories of produce, fish, deli, bakery, and meats were eliminated from the analysis because it was impossible to apply the requisite attributes (i.e., there were few, if any, standard brands, sizes, or flavor classifications in these categories)

It requires the assumption that any difference in the sales in the two time periods could be attributed to the experiment, whereas we desire to measure effects of covariates on the change in sales. Some of the covariates are manipulations of the experiment, and others are outside the experiment. Because this experiment was not conducted in a lab but in a real purchasing environment, many factors are not accounted for in a simple t-test. Probably most important to our experiment are seasonal consumption patterns. For example, coffee sales are much higher in winter months than in summer months, and bottled water sales peak in late spring and early summer months. Because we have only one year of data, the periods of the experiment are potentially confounded with these seasonal consumption patterns. In addition, the prices of the individual products were not held constant but varied with the typical plethora of product promotions. Furthermore, these seasonal and promotional effects vary by category as well. In addition, the pre-cut period is six months, whereas the post-cut period is five months. Given the high variance in sales at the category level, the single month of additional observations can dramatically affect the variance of the estimate of mean sales, meaning that the mean sales estimates of the two periods do not have the same variance. Whatever statistical test is used to compare sales across the two time periods must account for differing variances.

Because of these complications, our basic model is in the following form:

$$(1) \qquad S_{jt} = \kappa\theta^{I_{REDUCT}} C_{jt}^{\gamma} \exp\left(\sum_{i=1}^{q} \phi_i x_{ijt}\right)\varepsilon_{jt},$$

where S_{jt} is sales of the experimental group in category j for month t; I_{REDUCT} is an indicator variable that takes the value of 1 after the SKU reduction; C_{jt} is the sales of the control group in category j in month t; $\{x_{ijt}\}$, i = 1, ..., q are covariates; and ε_{jt} is an error term. Linear regression can be used to estimate the parameters of the logged form of the model. This model can be considered a modified version of the basic t-test for differences in means, where the additional terms make the necessary adjustments for the complications mentioned in the preceding paragraph. Use of sales information from a control group (C_{jt}) adjusts S_{jt} for price changes, seasonality, and promotions. Both the control group and the experimental group received the same prices, promotions, and advertising. Furthermore, both populations reside in the same city, so their seasonal consumption patterns would be roughly identical. Therefore, as C_{jt} increases, the probability of purchase for an individual household would increase. The use of monthly data makes the homoskedasticity assumption on $\log(\varepsilon_{jt})$ (for hypothesis tests) more plausible than the data aggregated to two periods.

The basic regression model ignores the diverse tastes and needs of the consumers, however. Consumer heterogeneity is an additional source of variation, which is not accounted for by Equation 1. One possible method of incorporating consumer heterogeneity would be a mixture model, in which we would assume the consumers would belong to one of k segments of homogeneous consumers. Another possibility is to allow consumers all to differ from one another through a random effects model specification. A priori, there are no particular reasons to expect the consumer preferences to fall readily into one of a small number of segments. Furthermore, Allenby, Arora, and Ginter (1998) provide evidence that consumer heterogeneity is often much greater than that measured by a mixture model (latent class model). To allow for consumer heterogeneity, we model sales at the household level using a random effects model specification (variance components):

$$(2) \qquad S_{hjt} = \kappa_h\theta_h^{I_{REDUCT}} C_{jt}^{\gamma} \exp\left(\sum_{i=1}^{q} \phi_{ih} x_{ihjt}\right)\varepsilon_{hjt},$$

$$\Theta_h \sim MVN(\mu, \Sigma),$$

where S_{hjt} is sales to household h of category j in month t; $\Theta_h = [\kappa_h, \theta_h, \phi_{1h}, \ldots, \phi_{qh}]$, h = 1, ..., H; H is the total number of households in the data; and $\mu = [\bar{\kappa}, \bar{\theta}, \bar{\phi}_1, \ldots, \bar{\phi}_q]$ is a vector of the population means. Note that the household-level model includes an exponent γ for C_{jt}; because of the asymmetry of the log-normal distribution, individual household sales will not be exactly proportional to sales aggregated over a group of consumers. For simplicity, we specify Σ to be diagonal; that is, $\Sigma = \text{diag}(\sigma_\kappa^2, \sigma_\theta^2, \sigma_{\phi 1}^2, \ldots, \sigma_{\phi q}^2)$, the assumption that characterizes this model as variance components. Such models have been used extensively in the sciences to allow for variance at different levels in the data (Searle, Casella, and McCulloch 1992).

An additional complication arises with the model at the household level. Many households do not purchase from the online service in every category in every month, meaning that our data contain a large number of observations where $S_{hjt} = 0$. We therefore use a simple mixture model:

$$(3) \qquad S_{hjt} = \begin{cases} 0 \text{ w.p. } (1-p) \\ \kappa_h\theta_h^{I_{REDUCT}} C_{jt}^{\gamma} \exp\left(\sum_{i=1}^{q} \phi_{hi} x_{ijt}\right) \text{ w.p. } p \end{cases}$$

$$\Theta \sim MVN(\mu, \Sigma).$$

Although Equation 3 appears similar to a Tobit, it is not a censored model but an uncensored model mixed with a point mass. Similar to the Tobit and unlike latent class mixture models, however, mixture membership is observed in the data. The parameter p captures the percentage of observations that contain a purchase (the "when" of Gupta 1988), and the remaining parameters characterize the quantity of purchase (the "how much" of Gupta 1988). We estimate the coefficients of the model using maximum likelihood, where the likelihood for the model is given in the Appendix. The sample size of our data was 74,305 total observations, and for 43,219 observations $S_{hjt} > 0$.

Covariates

For the q covariates $\{x_i\}$ in Equation 3, we construct variables that measure category attributes: market share, number of available items (SKUs), number of brands, number of sizes, number of brand–sizes, number of flavors, and category price. Our measure of market share ($MKTSHR_{jt}$) is defined as the category dollar market share of the eliminated items in category j at time t. Product market shares, w_{nj}, are calculated relative to the category, or

$$(4) \qquad w_{nj} = \frac{\sum_{t=1}^{T_1} s_{njt}}{\sum_{m=1}^{N_j} \sum_{t=1}^{T_1} s_{mjt}},$$

where s_{njt} is the dollar sales of item n ($n = 1, \ldots, N_j$) in category j for week t ($t = 1, \ldots, T_1$) for the experimental group before the assortment cut,[5] and $\Sigma_{m=1}^{N_j} \Sigma_{t=1}^{T_1} s_{mjt}$ is the dollar sales of category j for the experimental group of consumers before the assortment cut. The share of the eliminated items in category j is then

$$(5) \qquad MKTSHR_{jt} = \frac{\sum_{l=1}^{L_{jt}} w_{lj}}{\sum_{n=1}^{N_j} w_{nj}},$$

where $l = 1, \ldots, L_{jt}$ indexes the products eliminated from category j at time t. Because all items were available at first, $MKTSHR_{jt}$ equals 0 before the SKU reduction.

The variable $ITEMS_{jt}$ is the percentage of eliminated items:

$$(6) \qquad ITEMS_{jt} = 1 - \frac{\text{count(SKUs in category j) at time t}}{\text{count(SKUs in category j) before assortment change}}.$$

Similar to $MKTSHR_{jt}$, $ITEMS_{jt}$ equals 0 before the SKU reduction, because all items were available at that time. Similarly, $BRAND_{jt}$, $SIZE_{jt}$, $FLAVOR_{jt}$, and $BRNDSZ_{jt}$ are the percentages of brands eliminated, sizes eliminated, flavors eliminated, and brand–size combinations eliminated, respectively. Finally, $PRCCHG_{jt}$ is the ratio of the category price at time t to that before the SKU reduction. Because we need the category price of offered products rather than purchased products, we calculated category price using the data for the universe of consumers rather than for our experimental or control group.[6] To calculate category price p_j, we used the share-weighted average of item prices,

$$(7) \qquad p_j = \sum_{n=1}^{N_j} w^u_{nj} \frac{1}{T_1} \sum_{t=1}^{T_1} p_{njt},$$

where $n = 1, \ldots, N_j$ indexes the items within category j; w^u_{nj} is the market share of item n in category j calculated over the universe of consumers; $t = 1, \ldots, T_1$ indexes weeks before the assortment reduction; and p_{njt} is the price of item n in category j during week t. Our measure of category price change is then

$$(8) \qquad PRCCHG_{jt} = \frac{\sum_{m=1}^{M_{jt}} w^u_{mj} \frac{1}{T_1} \sum_{\tau=1}^{T_1} p_{mj\tau}}{p_j},$$

where products $m = 1, \ldots, M_{jt}$ represent the products retained in category j. Before the SKU reduction, $PRCCHG_{jt}$ takes the value of 1.

To allow for increasing/decreasing marginal effects of the independent variables, we also include the squares of the independent variables in our model. The loss of one brand versus zero brands of ten total may not affect sales, but the loss of seven brands versus six of ten total may affect sales greatly.

To facilitate interpretation of θ_h, we recode the variables so that they are mean-centered after the SKU reduction and equal to 0 before the SKU reduction. The parameter θ_h then can be interpreted as the average change in sales coinciding with the SKU reduction. Also, in 13 categories, flavors were either nonexistent (e.g., diapers) or ill-defined (e.g., frozen dinners). We therefore multiply the flavor covariates by an indicator variable I_F, which takes the value of 1 when flavors exist, 0 otherwise. In the hypothesis tests on flavor, we adjust the degrees of freedom to correct for the reduced number of observations used to estimate the flavor parameters.

Therefore, $[x_{1jt}, \ldots, x_{qjt}] = [BRAND_{jt}, BRAND_{jt}^2, SIZE_{jt}, SIZE_{jt}^2, I_F \times FLAVOR_{jt}, I_F \times FLAVOR_{jt}^2, ITEM_{jt}, ITEM_{jt}^2, BRNDSZ_{jt}, BRNDSZ_{jt}^2, MKTSHR_{jt}, MKTSHR_{jt}^2, PRCCHG_{jt}]$. This matrix can also be summarized as [ATTRIBUTES, ITEMS, COVARIATES], where ATTRIBUTES is a matrix composed of the brand, size, and flavor variables; the ITEMS matrix is composed of the two items variables; and the remaining variables are included in the COVARIATES matrix.

Results

The results can be divided into two general classes: population mean parameters and heterogeneity (variance) parameters. The estimates of the population mean parameters $\mu = [\bar{\kappa}, \bar{\theta}, \phi_1, \ldots, \phi_q]$ and γ of the model are presented in the top portion of Table 2. Almost all of these parameters are statistically significant. At least one component (linear or quadratic) of market share, brand, and flavor is significant at the .05 level; however, size is not significant.[7]

These results indicate that (1) sales are affected by changes in the number of available SKUs; (2) the market share of items eliminated, the number of brands eliminated, and number of flavors eliminated all affected sales; (3) on average, category sales increased on the order of 11% in the experimental group; (4) a decline in sales due to brand reductions can be partially offset by reductions in brand–size combinations; and (5) reductions of assortment characteristics do not have a simple proportional relationship to sales.

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[5] We used the experimental group here for our share calculation to ensure that we accounted for its preferences rather than those of the universe of consumers.

[6] The universe of consumers is the union of the experimental and control groups.

[7] The F-test for joint significance of the linear and quadratic factors for size also finds size to be insignificant

TABLE 2
Parameter Estimates in Model of Sales (S_{hjt})

	Estimate	Standard Error	*p*-Value
$\bar{\kappa}$	1.592	.0197	<.0001
$\bar{\theta}$	.104	.0139	<.0001
γ	.324	.0083	<.0001
p	.582	.0018	
$\bar{\phi}$ *for*			
ITEMS	–8.601	.5447	<.0001
ITEMS^2	9.805	.5614	<.0001
SIZE	–.208	.1536	.1766
SIZE^2	.400	.2553	.1180
BRANDSIZE	2.419	.4480	<.0001
BRANDSIZE^2	–2.629	.5194	<.0001
BRAND	1.192	.2107	<.0001
BRAND^2	–2.620	.2740	<.0001
MKTSHR	1.063	.2631	<.0001
MKTSHR^2	–3.540	.4539	<.0001
FLAVOR	.335	.1261	.0084
FLAVOR^2	–1.040	.2423	<.0001
PRCCHG	2.783	.2958	<.0001
Heterogeneity Parameters			
σ^2_{κ}	.0953	.009	
σ^2_{θ}	.0241	.009	
σ^2_{ITEMS}	.2951	.174	
$\sigma^2_{\text{ITEMS\^{}2}}$	.0000		
σ^2_{SIZE}	.6399	.099	
$\sigma^2_{\text{SIZE\^{}2}}$	.0000		
$\sigma^2_{\text{BRNDSIZE}}$	.2136	.129	
$\sigma^2_{\text{BRNDSIZE\^{}2}}$	.0000		
σ^2_{BRAND}	.2601	.126	
$\sigma^2_{\text{BRAND\^{}2}}$	.0207	.196	
σ^2_{SHARE}	.1922	.137	
$\sigma^2_{\text{SHARE\^{}2}}$	.2656	.365	
σ^2_{FLAVOR}	.1695	.039	
$\sigma^2_{\text{FLAVOR\^{}2}}$	.0000		
$\sigma^2_{\text{PRCCHNG}}$	7.05	1.68	

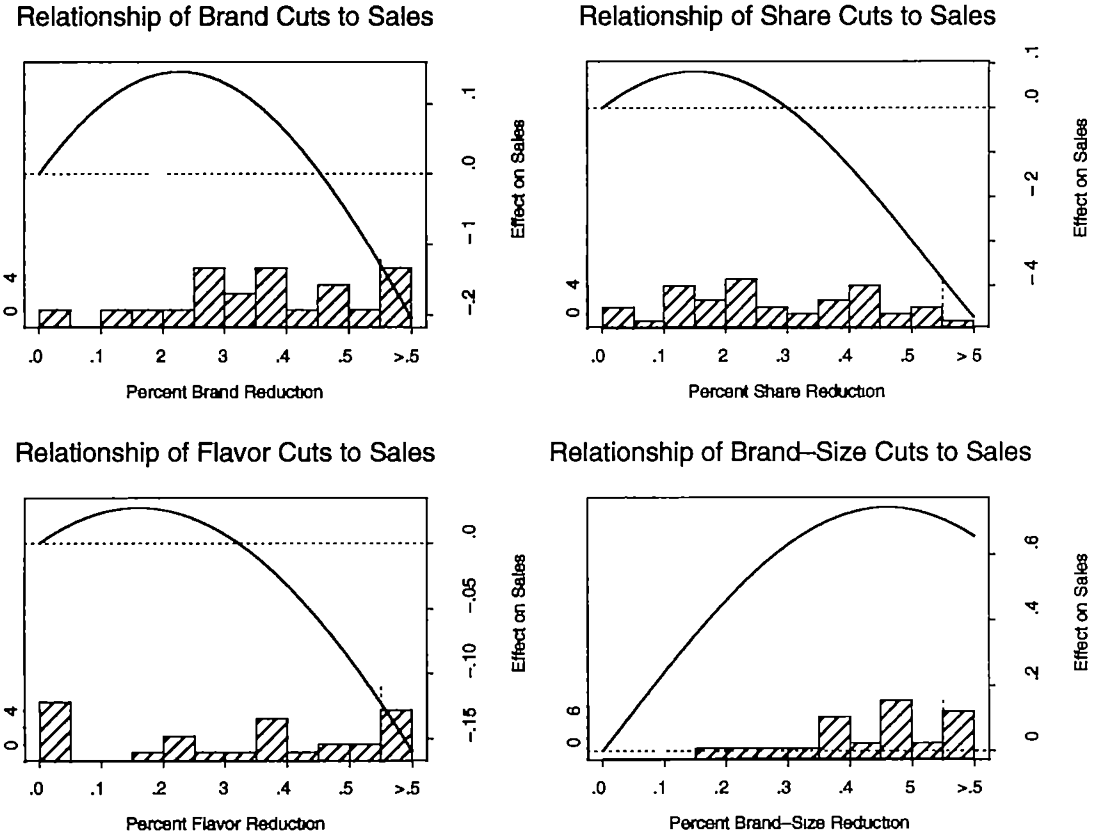
Notes: The *p*-value on the linear and quadratic flavor terms of $\bar{\phi}$ have been adjusted for fewer degrees of freedom. In addition, all the signs and significances of the parameters are the same when the model is fit without categories with flavors.

The coefficient estimate for θ_h is .104, indicating that sales increased, on average, by $e^{.104}$, or approximately 11% after the assortment reduction, in which the average effect is across both consumers and categories. Overall, therefore, the experiment of reducing the assortment increased rather than decreased sales. For the effects of category attributes, most involve multiple parameter estimates. To clarify these effects, we have included graphs of some of these nonlinear relationships in Figure 4.

As shown in the graphs, initial reductions in share, the number of brands, and the number of flavors tend to increase sales, whereas further cuts engender sales declines. On average, the retailer in our data enjoyed maximal sales increases for reductions of approximately 25% of the brands, 18% of the flavors, and items accounting for 15% of the market share. Because the majority of the eliminated SKUs were small-share items (see Figure 3), a 15% reduction is already a large reduction of market share. Reductions in the clutter of brand–size combinations (when the number of brands and the number of sizes are held constant) increase sales of the category, though the marginal benefit of the reductions is decreasing. Finally, item reductions (not shown in Figure 4) decrease category sales, for which the negative effect is marginally decreasing. In all panels of Figure 4, the data histograms are included to show that the curves are estimated using data on both sides of the inflection points.

Brand reductions and brand–size reductions have opposite effects. Because of the close relationship of these two factors, along with their opposing impacts, it is theoretically plausible that brand reductions end up having a net effect close to zero. Although it is possible to eliminate brand–sizes without affecting the number of brands and/or sizes

FIGURE 4
Effects of Attribute Cuts on Sales



available, it is impossible to eliminate whole brands or sizes without affecting the number of brand–size combinations available. Typically, a grocery retailer does not carry all the brand–size combinations that are available from the manufacturer. In our data, a 10% reduction in brands resulted, on average, in approximately a 4% reduction in brand–size combinations (holding the number of available sizes constant). This relationship can be used to test the multivariate hypothesis $L\beta = 0$, where $L = [1, 1, .4, .4^2]$ and β is a vector of the parameter estimates of brand, quadratic–brand, brand–size combinations, and quadratic–brand–size effects, respectively. The F-statistic for this hypothesis was significant ($p < .0001$), meaning that, on average, a reduction in brands affects sales even after the positive effect of the reduction of brand–size combinations is taken into account.

The estimates of consumer heterogeneity are included in the lower portion of Table 2. Of particular importance is the heterogeneity on the change in sales due to the assortment reduction, θ_h, which is estimated as $\theta_h \sim N(.104, .0241)$. Of the mass of this normal density, 75% is greater than zero. Therefore, in addition to a significantly positive estimate for the population mean (i.e., average sales increased), the heterogeneity distribution estimates that 75% of consumers increased their category expenditures after the assortment cut.

For heterogeneity with respect to the elimination of product attributes, the results show that consumers are heterogeneous in their reactions to cuts of each attribute.[8] The largest heterogeneity parameter among the linear components of brand, size, and flavor is that for size, indicating that a reduction in the assortment of sizes results in a mixed reaction from consumers. The large degree of heterogeneity indicates that some consumers were upset with the reduction, but others welcomed the shorter list. Thus the heterogeneity parameter highlights an important result that is masked by the statistical insignificance of the population mean for size: The loss in sizes affects some members of the population quite strongly. Sales from some consumers decreased with the size deletions, but sales from other consumers balanced those losses such that the overall effect (the population mean) was close to null.

Although the heterogeneity parameter on the size reduction indicates a divergence of reactions, the small degree of heterogeneity indicated by the brand–size parameter suggests uniformity with respect to the elimination of clutter. When the estimated distribution of the brand–size linear term is N(2.419, .2136), a reduction in brand–size combinations elevates sales for the whole population, not just for a portion of it. In essence, no consumers are upset with the reduction of brand–sizes, provided that there is little change in the number of available brands and sizes.

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[8] Although some of the heterogeneity parameter estimates are zero for the quadratic effects, the results indicate that consumers are heterogeneous with respect to the linear portion of all the factors. The estimation algorithm (restricted maximum likelihood) is an iterative procedure wherein variance parameters are set to zero when they are, in essence, very close to zero.

We can also investigate the purchase probability of the population (i.e., the estimate of p of Equation 3, which is shown in Table 2). In some respects, this is a measure of category-level customer retention, in that it reflects the likelihood that a customer will make a category purchase, irrespective of the size of the shopping basket. (Recall that the distribution of θ_h indicates that 75% of consumers increased their category expenditures after the assortment cut.) The parameter p is purchase incidence, the probability that an observation (sales for a random household in a random month and random category) is not zero. In our data, 58.2% of the observations were nonzero. It is also possible to estimate p before and after the assortment reduction and test if the purchase probability changes because of the manipulation in assortment, for p is a proportion, and the difference in proportions is asymptotically normally distributed. We estimate p_1 to be .595 and p_2 to be .566, where p_1 refers to the purchase probability prior to the assortment cut. As for the hypothesis that $p_1 - p_2 = 0$, the *p*-value for the t-test of difference in proportions is less than .0001, which indicates that purchase probability has changed over the same time period as the change in assortment. For the control group, $\hat{p}_1 = .551$ and $\hat{p}_2 = .635$, which are significantly different from each other as well as from the experimental group estimates for p_1 and p_2. Therefore, during a season in which the purchase probability would be expected to increase, purchase probabilities for the experimental group significantly decreased. Again, the parameter p is a timing measure, a probability of purchase. This parameter decreases if some households buy less frequently in some categories. Our results indicate that some households did buy less frequently in some categories after the assortment reduction, though the loss in sales due to a smaller p was outweighed by an increase in purchase quantities, because overall sales increased.

In summary, we found that category sales increased, though the likelihood of making a purchase decreased, and that the attributes of a collection of products affected sales of the individual items within the collection. In addition, consumers' responses to changes in the availability of attributes differed across attributes (e.g., more mixed for size, uniform for brand–size combinations). In short, changes in the availability of attributes (i.e., attribute-based assortment) affect consumers differently and can help explain how category sales respond to changes in the SKUs offered.

Discussion and Implications

The primary objective of this research was to test the relationship between assortment and purchase behavior by examining how different types of changes in an assortment (i.e., SKU reductions) might affect sales differently. Unlike previous research on SKU reductions, our results indicate that a modest reduction, even one focusing on small-share items, can have a sizable impact on sales. Overall, we found that category sales tended to increase rather than decrease, on average, as a result of the SKU reduction. Broniarczyk, Hoyer, and McAlister (1998) and Drèze, Hoch, and Purk (1994) have suggested that SKU reductions can result in sales increases, and our model indicates that pragmatic cuts can boost sales significantly. Industry analysts have discussed how inventory reductions can lead to substantial cost savings, but our results indicate that pragmatic reductions in assortment do not just reduce costs but also can significantly increase sales.

Our secondary goal was to determine some meaningful attributes that indirectly affect sales, notably those that transcend a variety of categories and directly affect attribute-based assortment. Eliminating brands and flavors to a small degree helped sales, but deep cuts led to a decrease in sales. Therefore, the number of brands and flavors available within a category was meaningful and should be taken into account when category managers consider changes in their product offerings. Managers should be aware that consumers value the availability of their preferred brands and flavors, but pragmatic cuts in product offerings can increase overall category sales. The results may be summarized by a simple guideline: Eliminate redundant attributes while, on the margin, minimizing the number of brands, sizes, and flavors eliminated. More generally, the results suggest that simplifying choice can increase the sales of Web-based firms.

As mentioned previously, the formal attrition rate for the test panel was smaller than that for the control group, on the basis of membership cancellations. Yet there was a significant decrease in the category purchase probability despite the increase in overall sales, indicating that some consumers stopped purchasing in some categories even though the average consumer welcomed the assortment reduction by buying more. The category purchase probability is conditional on the customer returning to the store, but retailers may also be interested in the likelihood that a customer will not return. It is extremely difficult to obtain a reliable estimate of this measure of customer retention, as it must be estimated using interpurchase times, which in our data exhibit strong periodicity (people tend to purchase in weekly intervals). We are not aware of an applicable model that allows for this type of periodicity in the statistics or marketing literature. Rather, given our findings on the importance of category attributes, we investigated retention at the attribute level. We did this by examining the willingness of consumers to make purchases within a category in which their favorite brand, size, or brand–size combination was eliminated. Although the SKUs eliminated were typically small-share items, they frequently constituted the sole class of products along a particular attribute purchased within a particular category for a household. By focusing on only those purchase records in which a household bought a singular brand, size, or brand–size combination within a category before the SKU reduction, we are most likely to capture the cases in which a household lost its favorite attribute.

When a household lost the only brand it had purchased within a category before the cut, that household returned to make a purchase in the category 38.7% of the time (see Table 3). As a point of comparison, the proportion of households that bought a singular brand that was not cut and returned to buy in the category was 69.4%. This difference was highly

TABLE 3
Category Repurchase Rates for Households Loyal to a Single Attribute

	Households Loyal to One		
	Brand	**Size**	**Brand–Size Combination**
Within-category purchase records	3583	3422	2615
Purchased Item Eliminated			
Records in which sole item was cut	150 (4.2%)	150 (4.4%)	208 (8.0%)
Continued purchasing in category	58 (38.7%)	76 (50.7%)	111 (53.4%)
Purchased Item Retained			
Records in which sole item was not cut	3433 (95.8%)	3272 (95.6%)	2407 (92.0%)
Continued purchasing in category	2381 (69.4%)	2218 (67.8%)	1616 (67.1%)

significant (z-score = –7.57, $p < .0001$). Consumers were much less likely to buy in a category when their favorite brand was eliminated. Similarly, fewer consumers returned to shop in a category if their preferred size was eliminated (50.7%) than if it remained (67.8%), and this difference, though much smaller than the brand effect, was also highly significant (z-score = –4.11, $p < .0001$). In the case in which consumers purchased only one brand–size combination before the cuts and that combination was eliminated, 53.4% came back to buy in the category. Those whose sole brand–size combination was not cut were far more likely (67.1%) to buy in the category again during the post-cut period (z-score = –3.83, $p < .001$).

The loss in category purchasers seems large, yet retailers may be surprised to learn that nearly 40% of consumers who were extremely loyal to a singular brand and 50% who bought a single size or brand–size combination exclusively returned to purchase in the category after that attribute was eliminated. We should also note that eliminating brands had a more profound effect than either size or brand–size combination on leading these consumers to stop shopping in the category, which is not surprising given the results of our model regarding the significant impact of brand cuts on sales.

Overall, because of the heterogeneity of consumer preferences, elimination of any items will almost certainly cause some consumers to stop purchasing in the category. However, many of even the most product-loyal buyers will switch to an alternative product if their favorite item is eliminated. Furthermore, pragmatic product cuts can lead to sales increases, which greatly outweigh the loss in sales from the relatively few consumers who leave the category.

Limitations and Further Research

Although we develop a functional approximation of how sales are affected by changes in the availability of particular category attributes, our goal is exploratory and descriptive rather than explanatory. We use a random effects model that contains only a few category attributes and several covariates across a large number of categories to determine (1) if the availability of category attributes affects sales and (2) what some of those attributes are. Therefore, our research provides guidance to managers who aspire to alter their assortment. One common rule of thumb for an assortment reduction has been to eliminate small-share items. Although individually, small-share items contribute less to category sales, we find this rule of thumb to be overly simplistic. We find that judicious cuts of small-share items can increase sales rather than maintain current category sales levels. Cuts that eliminate redundancy boost sales, whereas cuts that eliminate key attributes reduce sales. For example, consider a simplistic category containing, among other items, 30-ounce regular Cascade, 30-ounce lemon-scented Cascade, and 75-ounce regular Cascade dishwasher detergent. Assuming that all these items have the same market share, the best item to eliminate would be the 30-ounce regular Cascade, because the consumer still would have access to lemon-scented and regular Cascade, and the consumer also would have the choice of 30 ounces or 75 ounces. Although our results do not offer optimal selections for individual categories, we find that the online grocery retailer would benefit by offering a smaller selection than the typical full-service bricks-and-mortar grocer offers.

Our results also raise several additional managerial issues worthy of further research. As would be expected, overly sparse assortments yield low sales. Although new products are typically viewed as either beneficial or neutral, our results imply that adding redundant new products may be harmful to category sales. We emphasize that our findings are based solely on item reductions. However, if these results hold for category additions, additional items (not necessarily new items) may depress overall category sales rather than increase them. We do not know of research that has investigated how the addition of category attributes (e.g., new brands) has affected category sales. Given the frequent introduction of new products into mature categories, we view this topic as one that is relevant to both managers and academics.

Future work could also investigate meaningful category-specific attributes, which might be tied to specific product types (e.g., food, nonfood). Although our work finds brand and flavor to be meaningful attributes, individual categories or clusters of similar categories should be considered if the goal is to develop a more accurate functional relationship between attributes and sales rather than the general reduced form function proposed here. For example, the relevant attributes in the toilet paper category (e.g., softness, color/

pattern, ply, brand, size) might be very different from those in the ice cream category (e.g., flavor, fat content, brand, size) but very similar to those in the paper towels category.

Although we find that brand, for whatever reason, is one of the most important category attributes, an analysis at the category level would be better suited to exploring specific brand associations. Consider the following example from Pan and Lehmann's (1993, p. 77) work: "Sony electronics are expensive (compared to other brands)." Or, a more appropriate example for this research: Hefty bags are "strong" plastic bags. Therefore, eliminating Hefty brand bags from an assortment might be synonymous with eliminating strong plastic bags. This research has shown that consumers respond strongly to the loss of brands, yet we recognize that brand may act as a surrogate for or may be confounded with other category attributes. In addition, the various associations with brand might differ across product categories. Exploring these associations is well beyond the scope of this article, yet in spite of this potentially high degree of variation in brand associations, brand appears as an important attribute across categories.

Future work in this area could also explore whether an optimal selection of items exists, which could depend on the availability of attributes and attribute options within a category. In other words, is there an absolute ideal for an assortment, or are consumers affected only by changes in items available (absolute or relative)?[9] Furthermore, do consumers tend to adapt to the selection offered by a retailer, as adaptation theory suggests (Bawa, Landwehr, and Krishna 1989; Helson 1964)? Another potential issue for further research pertains to the role of small grocery stores. Small grocery stores may end up serving a dual role—not only are they usually closer to consumers and decrease driving time, but they also may reap the demand-side benefits of reduced assortment (as well as the benefit of smaller inventory costs). Grocery chains may find it desirable to have multiple types of stores serving the same consumers—the megastore where everything can be found, as well as the streamlined outlet where the consumer can quickly and easily find general items.

More work could also be done using a model such as that developed by Rossi, Allenby, and Kim (2000) to determine how readily consumers substitute across attributes. Our research focuses on existing regular customers. Future work may more fully explore how assortment affects customer acquisition and retention. Finally, our results and those of other studies (Broniarczyk, Hoyer, and McAlister 1998; Drèze, Hoch, and Purk 1994; Food Marketing Institute 1993) show that sales are increased or at least unaffected by reductions in item counts. To understand fully how consumers respond to different assortments and changes in assortment, researchers must begin modeling the mental process consumers employ when confronted with an assortment of items in a category in which they are considering, or are intent on, making a purchase. We have already begun conducting a series of laboratory experiments and are making significant progress in determining the link among attribute availability, assortment perceptions, and purchase intention.

Appendix

The parameters of Equation 3 can be estimated using conventional techniques, as the likelihood can be written as a binomial likelihood for p and a linear random effects model for the remaining parameters. The model is

$$\text{(A1)} \qquad S_{hjt} = \begin{cases} 0 \text{ w.p. } 1 - p \\ \kappa_h \theta_h^{I_{REDUCT}} C_{jt}^{\gamma} \exp\left(\sum_{i=1}^{q} \phi_{hi} x_{hijt}\right) \varepsilon_{hjt} \text{ w.p. } p \end{cases}$$

$$\Theta_h \sim MVN(\mu, \Sigma),$$

where $\Theta_h = [\kappa_h, \theta_h, \phi_{1h}, \ldots, \phi_{qh}]$, $\mu = [\bar{\kappa}, \bar{\theta}, \bar{\phi}_1, \ldots, \bar{\phi}_q]$, $\Sigma = \text{diag}(\sigma_\kappa^2, \sigma_\theta^2, \sigma_{\phi 1}^2, \ldots, \sigma_{\phi q}^2)$, and $\log(\varepsilon_{hjt}) \sim$ i.i.d. $N(0, \sigma^2_e)$.

Given the sales S_{hjt} for household h = 1, ..., H of category j = 1, ..., J in month t = 1, ..., T along with covariates x_{hijt}, the likelihood is

$$\text{(A2)} \qquad L\left(\{\phi_{hi}, \kappa_h, \theta_h\}, p, \gamma \middle| \{S_{hjt}, x_{ijt}\}\right)$$

$$= \prod_{S_{hjt}=0} (1 - p) \prod_{S_{hjt} \neq 0} pg\left(\{\phi_{hi}, \kappa_h, \theta_h\}, \gamma \middle| \{S_{hjt}, x_{ijt}\}\right).$$

Because g( ) is not a function of p, the distribution of p is proportional to the binomial distribution, meaning that the maximum likelihood estimate of p is

$$\text{(A3)} \qquad \hat{p} = \frac{n_1}{n_1 + n_2},$$

where n_1 is the number of observations where $S_{hjt} > 0$, and n_2 is the number of observations where $S_{hjt} = 0$.

The remaining parameters are all contained in the function g( ), the density of a random effects model. In general notation, the random effects model is as follows (Searle, Casella, and McCulloch, 1992):

$$\text{(A4)} \qquad y = X\beta + Zu + e,$$

where y is an $n_1 \times 1$ vector of observations, β represents fixed effects, u represents random effects, and Zu is partitioned as

$$\text{(A5)} \qquad Zu = [Z_1, \ldots, Z_r]\begin{bmatrix} u_1 \\ \vdots \\ u_r \end{bmatrix} = \sum_{i=1}^{r} Z_i u_i.$$

The length of u_i is q_i, where for our data $q_i = n_1$ for all i, the total number of observations of nonzero sales. In the customary random model, the random effects represented by u_i have the properties $E(u_i) = 0$ and $\text{var}(u_i) = \sigma_i^2 I_{qi}$ for all i, and $\text{cov}(u_i, u_h') = 0$ for $i \neq h$. In addition, $E(e) = 0$, $\text{var}(e) = \sigma_e^2 I_{n_1}$, and $\text{cov}(u_i, e') = 0$ for all i. These assumptions lead to

$$\text{(A6)} \qquad E(y) = X\beta$$

and

$$\text{(A7)} \qquad V = \text{var}(y) = \sum_{i=1}^{r} Z_i Z_i' \sigma_i^2 + \sigma_e^2 I_{n_1}.$$

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[9] This question was offered up by Debbie MacInnis

A notational convenience is to define $u_0 = e$ and $Z_0 = I_{n_1}$. This gives

$$\text{(A8)} \qquad y = X\beta + \sum_{i=0}^{r} Z_i u_i \quad \text{and} \quad V = \sum_{i=0}^{r} Z_i Z_i' \sigma_i^2.$$

The likelihood for all parameters but p is therefore

$$\text{(A9)} \quad L = L(\beta, V|y) = \frac{\exp\left[-\frac{1}{2}(y - X\beta)' V^{-1}(y - X\beta)\right]}{(2\pi)^{\frac{1}{2}n_1}|V|^{\frac{1}{2}}}.$$

We used Proc Mixed in SAS to obtain the maximum likelihood estimates of the parameters of this likelihood, and we report them in Table 2.

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Successful and Unsuccessful Sales Calls: Measuring Salesperson Attributions and Behavioral Intentions

Applying attribution theory to consumer behavior issues is quite common. In the managerial arena, previous research suggests that salespeople's attribution processes affect their expectancies for success and future behavior. However, no published research has developed adequate measures that might be used to examine the full range of attributional responses for sales success or failure and the behaviors that are likely to follow such attributions. The goal of this research is to develop a complete set of attributional and behavioral scales for sales success and failure and validate such scales in a real-world context—among field sales representatives. Following Churchill's (1979) recommended process, the authors develop a complete set of attributional and behavioral intention scales that is applicable to a field sales force setting. The authors then measure 228 financial services representatives' performance attributions for a previous sales interaction; their intended behaviors for a future, similar selling situation; and their personal characteristics. The authors test the validities of the scales and examine the usefulness of applying the scales within a theoretically justified nomological network of relationships.

> A potential client ... refused to buy what I recommended, offering really poor reasons for his decision.... On the way back to the office, I thought about why he really refused to take my recommendation.

This excerpt from a salesperson interview represents a process that attribution theorists call "naive psychology." Previous research suggests that people use this cognitive process frequently to seek explanations for events around them, particularly when an unexpected, important, or negative outcome occurs (Dalal 1988; Kelley 1967; Weiner and Kukla 1970; Wong and Weiner 1981).

Unfortunately, unexpected and sometimes negative outcomes are just a part of the job for people engaged in sales. Salespeople aspire to minimize important negative occurrences, such as failing to close a sale. By reflecting on why they have failed, salespeople may recognize behaviors that might be changed. Thus, attributional search—asking why something occurred—serves an adaptive purpose, propelling sales representatives toward better understanding and new behavior and helping them reach their sales goals (Weiner 1986).

Reducing the incidence of failing to close a sale is a concern of people in industry. If salespeople are making erroneous attributions about what is causing them to fail, their subsequent behaviors are not likely to lead to success. Sales managers need to understand the type of attributions their salespeople are making and what behaviors are driven by these attributions. If specific attributions for failure lead to negative, counterproductive behaviors or positive, proactive behaviors, managers will benefit greatly from understanding the attributional/behavioral patterns of their salespeople as well as the forces driving such attributions. In addition, if dispositional factors relate to specific attributional tendencies, this has direct implications for the salesperson selection process.

Initial work in this area by Teas and McElroy (1986) provides a theoretical framework for understanding the kind of attribution salespeople might make following a successful or unsuccessful sales encounter. However, subsequent empirical work does not provide a complete set of usable scales to measure salespeople's attributions and their subsequent behaviors. Testing Teas and McElroy's (1986) propositions through an experimental design, Johnston and Kim (1994) fall short of developing a full set of attributional and behavioral measures in their work, which involves hypothetical sales scenarios and college students. DeCarlo, Teas, and McElroy (1997) test an attribution model that focuses on the links among performance, attributions, and expectancies; however, they note that their measures do not adequately tap the domain of the attributional concepts. Both of these studies provide insight into the salesperson's attributional processes yet do not provide a complete set of attributional and behavioral scales that might enable us to investigate important attribution–behavior linkages.

Sujan (1986) provides usable attributional and behavioral scales in his research; however, the scope of his scales is limited. Sujan focuses solely on effort and strategy behaviors of working harder and working smarter, yet sales repre-

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sentatives have other behavioral options available (e.g., obtaining assistance from a peer or supervisor, avoiding a future similar situation, making no behavioral changes). In addition, several researchers have applied attribution theory to consumer behavior issues (for an extensive review, see Folkes 1988; more recent work includes Folkes and Kamins 1999; Folkes, Koletsky, and Graham 1987; Mittal, Kumar, and Tsiros 1999; Taylor 1994), but these studies provide scant insight into how attribution theory can be operationalized within the sales domain.

We attempt to bridge the gaps by developing a complete set of attributional and behavioral intention scales for sales success and failure. We validate the new scales in a real-world context—among field sales representatives—and ask subjects to consider their attributions and behavioral intentions in a real-world (not hypothetical) context. Following Churchill's (1979) recommended process, we develop a complete set of attributional and behavioral intention scales that is applicable to a field sales force setting. Then we measure sales representatives' performance attributions for a previous sales interaction; their intended behaviors for a future, similar selling situation; and their personal characteristics. We tested the validities of the scales and examined the usefulness of applying the scales within a theoretically justified nomological network of relationships.

Theoretical Background

In its broadest sense, attribution theory involves the attempts of ordinary people to understand the causes and implications of events (Ajzen and Fishbein 1983; Fincham 1983; Kelley 1967; Monson 1983; Ross and Anderson 1982). Weiner and colleagues (Weiner 1972, 1979, 1985, 1986, 1990; Weiner et al. 1971; Weiner, Nierenberg, and Goldstein 1976; Weiner, Russell, and Lerman 1978, 1979), as well as others (Kelley 1967, 1973), have provided the framework within which most researchers examine attributions. Their work has been primarily theoretical (versus empirical) in its contribution, and they do not, as Teas and McElroy (1986, p. 76) note, explore "the theory's relevance to sales force management issues." Snyder, Shultz, and Jones (1974) and Kelley (1973) suggest that attributions for successes and failures influence expectancy of future success and failure and subsequent behavior.

Integrating attribution theory and expectancy theory (Teas 1981; Vroom 1964; Walker, Churchill, and Ford 1977), Teas and McElroy (1986) develop a conceptual framework that describes the linkages among salespeople's performance, their attributions for that performance, and the impact of those attributions on their expectancy estimates. Teas and McElroy's framework relates the types of attribution made (controllable/uncontrollable, internal/external, stable/unstable; from Weiner 1979) by the salespeople for their performance (high or low performance) to how they view the performance in relation to prior events (i.e., whether the event information is perceived as consistent and distinctive and as having consensus; from Kelley 1967, 1973) and to the impact (positive, negative, or neutral) on the salespeople's expectancies for future performance (Walker, Churchill, and Ford 1977). Teas and McElroy (1986) also suggest that some dispositional characteristics are associated with particular attributional tendencies. (For additional details, see Teas and McElroy 1986.)

Properties Underlying Attributions

Weiner (1979) proposes three properties of the causes underlying successful or unsuccessful situations: locus of causality (internal versus external), causal stability (stable versus unstable), and controllability (controllable versus uncontrollable). By definition, if the locus of causality is internal, the cause resides within the salesperson whose success/failure is being examined; if it is external, the cause resides in other persons/entities within the environment. A stable cause persists over time and across situations; an unstable cause is subject to changing temporal or situational conditions. If the attribution is controllable, the salesperson has the power to change the cause; if it is uncontrollable, the environment or other persons/entities possess control of causation (Bettman and Weitz 1983; Teas and McElroy 1986; Weiner 1979, 1986). It should be noted that according to Weiner, the controllability dimension might not be distinct from that of the locus and stability dimensions. For example, salespeople probably view most external causes as uncontrollable and most internal causes as controllable (Weiner 1986, p. 346).

To extend the current knowledge (see DeCarlo, Teas, and McElroy 1997; Johnston and Kim 1994; Sujan 1986; Teas and McElroy 1986), we develop a complete set of attributional and behavioral scales for sales success and failure, which reflects the dimensions discussed previously. Using a sample of sales representatives, we validate these scales and examine their usefulness within a theoretically justified nomological network of relationships.

Methodology

Scale Development

The goal of the research was to develop and validate a complete set of attributional and behavioral intention scales for use in the sales arena. To ensure that the domain of each attributional and behavioral intention dimension was tapped, we developed multi-item scales in concert with Churchill's (1979) recommendations.

In-depth interviews and item development. The first step in the scale development was to conduct in-depth interviews with a convenience sample of seven salespersons. We audiotaped these interviews to ensure that we appropriately captured the salespersons' descriptions of their attributions and behaviors. The objective of these interviews was to see whether salespeople, using a free-elicitation approach, could easily and clearly recall their most recent successful and unsuccessful sales calls and whether their attributions for these successes and failures fell into the groups suggested by Teas and McElroy's (1986) framework. (Teas and McElroy provide conceptual dimensions of attributions but do not provide measurement scales with their conceptual framework.) Another purpose of these interviews was to explore the behavioral intentions that followed the salespersons' attributions for success and failures.

The salespersons were able to recall their most recent success and failure, and their descriptions of their attributions for these successes and failures closely matched those in Teas and McElroy's (1986) framework. From the taped interviews, we found that Sujan's (1986) items (he provides two items for the effort attribution and two for the strategy attribution) did not match the language reported in the interviews. Therefore, we used the audiotaped free-elicitation descriptions of the attributions and behaviors as a basis to develop all the original measurement items. Therefore, we wrote multiple items for each of the attributions that are suggested in Teas and McElroy's (1986) framework: effort, ability, strategy, task difficulty, and luck. We also wrote multiple items for the behavioral intentions that were uncovered in the literature search and in our pretest interviews: increase effort, change strategy, seek assistance, avoid the situation, and no change in behavior.

Item refinement. The four sets of items (attributions and behavioral intentions for the successful sale and the unsuccessful sale) were then subjected to item-sort exercises by four different groups: undergraduate students, MBA students, academicians, and salespeople. Several items were eliminated on the basis of the results of these item-sort exercises. This resulted in a list of five items for each attribution and five items for each behavioral intention, all of which were measured using six-point (forced-choice) Likert scales (where 1 = "strongly disagree" and 6 = "strongly agree").

Validity and reliability testing. To refine and further validate the scales, we used a survey methodology. We incorporated the items into a questionnaire that we administered to two samples: a pilot sample of 42 and a pretest sample of 100 salespeople. To achieve external validity, the questionnaire asked these respondents to recall their most recent sales success (in which they made a sale) and their most recent sales call in which they were not able to close the sale or schedule a follow-up appointment (in other words, an unsuccessful sales experience). Then the salespeople responded to a series of questions about these calls, including their attributions for success on the successful call and their attributions for failure on the unsuccessful call as well as their behavioral intentions in each case for the next similar call. The samples and survey procedures used for this refinement as well as the results are described next.

Samples and survey procedures. We obtained data from sales representatives working for a large *Fortune*-500 financial services company. Representatives in this sales division call on individual consumers to sell mutual funds; annuities; and life, automobile, and property insurance. Selling primarily in middle-income consumer markets, these sales professionals make sales calls to both existing customers and prospects. Most prospective customers are identified through referrals, seminars, special events, and/or cold calling. Because these sales are commission driven, the representatives have a strong degree of control over their sales call patterns and activities.

For the initial pilot, we used a convenience sample of sales representatives (a single district). The general manager for this district agreed to encourage participation in the study. Several communications were sent from the researchers to the sales managers (who report to the general manager). The researchers further encouraged response rates by sponsoring breakfasts at district field sales team meetings. A total of 42 sales representatives participated in this initial pilot. The primary purpose of this pilot was to ensure that the questions were understood and the length of time to complete the questionnaire was reasonable. On the basis of the feedback from this pilot, we reworded several items.

For the pretest, a random sample of 100 field sales representatives was selected and sent survey packets. The purposes of this pretest were to determine the expected rate of response for the full mailing (when breakfast incentives and personal contact with management would not be possible) and examine further the properties of the scales. This pretest provided us with adequate data for a power analysis and enabled us to determine the final survey sample size. We also conducted exploratory factor analysis and reliability analyses. The results supported the hypothesized structure of the scales; therefore, no additional changes were made to the scale items (see Appendices A through D).

Finally, using an nth-order sampling procedure, we sent surveys to 1200 salespeople, who were randomly selected from among those who had worked for the company as salespeople for a minimum of one year. (We believed that recently hired representatives would have different success and failure perspectives than would representatives having a base of experience; therefore, we excluded the new hires from the final sample.) Sales representatives received a questionnaire and a cover letter from the researchers asking for their cooperation and assuring them of confidentiality. A preaddressed, stamped envelope was provided for subjects to return the questionnaires directly to the researchers. The district sales managers distributed the questionnaires to the sales representatives' mailboxes; a letter from the company indicating support of the project and encouraging participation was distributed through intercompany mail. Three weeks after the initial mailing, a follow-up letter was sent to the sales managers reporting how many of their representatives had responded and asking them to encourage their representatives to participate. Usable questionnaires were obtained from 228 salespeople (response rate of 19%)—a reasonable response rate given that no response incentive was employed.

The sample was composed primarily of men (87%) with an average age of 43 years. As is typical of the financial industry, the sample was generally highly educated: 89% of the sales associates held an undergraduate or advanced college degree. On the average, the sales associates had worked for their sales units for 9 years and had 15 years of sales experience. It is important to note, therefore, that most of the salespeople in this sample are relatively successful. An analysis of the early and late respondents revealed that there were no significant differences in their demographics or their responses on the study variables. This analysis suggests that the likelihood of a nonresponse bias in this study is minimal. Additional reliability and validity tests described subsequently were conducted on the data collected from the final sample.

Measurement models. To refine and validate the scales further, we submitted each of the multi-item constructs for the successful and the unsuccessful sales experience to confirmatory factor analysis (using LISREL 8.20). Items having low squared multiple correlation coefficients and/or high cross-loadings were dropped. All attributional and behavioral scales were trimmed to three items on the basis of this analysis. At this point, we assessed the fit of the resulting model. For the sales success situation, the results are good ($\chi^2 = 218.51$, degrees of freedom [d.f.] = 120, $p \leq .01$; goodness-of-fit index [GFI] = .91; comparative fit index [CFI] = .97; root mean square error of approximation [RMSEA] = .06). For the unsuccessful sales experience, the model fit is also good ($\chi^2 = 629.15$, d.f. = 360, $p \leq .01$; GFI = .85; CFI = .96; RMSEA = .06). Although the chi-square goodness-of-fit measures for the overall models were statistically significant, other fit indices are close enough to the .90 benchmark (Bentler 1990) to suggest that the model fits the observed data acceptably. In addition, we obtained reasonable RMSEA estimates. Browne and Cudeck (1993) suggest that a value of .08 or less for an RMSEA fit index indicates a reasonable error of approximation and close model fit to the observed data. The scale items and their means, standard deviations, and item reliabilities are reported in Tables 1 and 2 for the successful and unsuccessful sales situation. The scale intercorrelations are reported in Table 3.

According to Anderson and Gerbing (1988), convergent validity can be assessed by determining whether each indicator's estimated pattern coefficient on its posited underlying construct factor is significant (greater than twice its standard error). An examination of Tables 1 and 2 indicates that all the factor loadings for the individual items are significant. Thus, convergent validity was confirmed for the scales.

We examined the multi-item scales for attributions and behavioral intentions for internal consistency using several criteria. In Tables 1 and 2, we report Cronbach's alpha (an indicator of construct reliability) and Fornell and Larcker's (1981) composite reliability estimate. These statistics for the attribution measures suggest strong internal consistency across the items in the constructs (.83 to .93 for alpha and .81 to .92 for composite reliability) for a sales success (Table 1), in that all scales exceed Nunnally's (1978) suggested Cronbach's alpha level of .70. Cronbach's alphas and composite reliability estimates for attribution measures for unsuccessful sales experiences (Table 2) also suggest strong internal consistency across the items in the constructs (.89 to .94 for alpha and .80 to .90 for composite reliability). Similarly, Cronbach's alphas and composite reliability estimates for behavioral intention measures for both successful (Table 1) and unsuccessful (Table 2) sales experiences indicate strong internal consistency across the items in the constructs.

The entries in Tables 1 and 2 also suggest that a reasonable level of discriminant validity was achieved, because all construct intercorrelations were significantly less than 1.0 ($p < .05$). To examine the discriminant validity of the constructs, we estimated Fornell and Larcker's (1981) average variance measure (Tables 1 and 2). If average variance is less than .5, the variance due to measurement error is larger than the variance captured by the construct, and the validity of the individual indicators, as well as the construct, is questionable. To satisfy fully the requirements for discriminant validity, the average variance measure must be greater than the squared correlation between the two constructs. In our study, the shared variance between any two constructs (i.e., the square of their intercorrelation) was less than the average variance explained in the items by the construct. Last, the t-values for all loadings across the scales were significant ($p < .01$), and item-to-total correlations were above .50. These results support the internal consistency and discriminant validity of each of the scales.

Concurrent Validation: Proposed Relationships and Results

As a test of concurrent validation of these scales, we examined their ability to substantiate relationships suggested by other researchers' theoretical frameworks (e.g., Teas and McElroy's [1986] work pertaining to effort, strategy, task difficulty, ability, and luck attributions) or empirical findings (e.g., Sujan's [1986] research that explores the effort and strategy attribution process). Figure 1 summarizes the nomological network of relationships between attributions and behavioral intentions. It should be noted that for the sake of brevity, the nomological framework was proposed for only unsuccessful selling situations.

We estimated the proposed model (in Figure1) using LISREL 8.20. The results indicate a reasonable fit between the model and the observed data ($\chi^2 = 903.25$, d.f. = 385, $p = .00$; GFI = .80; CFI = .92; RMSEA = .07), thereby suggesting that the nomological network of relationships fits these data (another indicator of support for the validity of these scales) (Churchill 1979). Excluding the GFI, the traditionally reported fit indices are within the accepted range (Hu and Bentler 1999). Exploring additional fit indices (as recommended by Hoyle and Panter [1995]), we find that both the nonnormed fit index (.91) and the incremental fit index (.92) both exceed the recommended .90 threshold levels (Hu and Bentler [1995] recommend these Type II and III incremental indices over the GFI, an absolute fit index). Additional restrictions to the proposed model (e.g., fixing insignificant paths) did not yield better fit of the model.

To examine the validity of these scales further, we tested the individual paths in the structural model to investigate whether the standardized estimate for each path is significantly different from zero (Table 4). Next, for an even stronger assessment of concurrent validity, we tested whether the proposed path is significantly stronger than all alternative (nonhypothesized) paths from the same attribution to other behavioral intentions. (We tested this by comparing the chi-square difference of a model in which all the paths from the attribution in question are freed with models in which the hypothesized path is constrained to be equal to an alternative path. The results of these comparisons are shown in Table 5.) We provide the theoretical justification and the results of the analysis for each of these relationships.

Effort attribution. Sujan (1986) suggests that if salespeople believe that they failed to make a sale because of insufficient effort, they are likely to exhibit greater levels of effort in similar future sales situations. Because Sujan (1986) examines this relationship in the context of only one other attribution (strategy), we attempt to confirm Sujan's findings in the context of the full range of attributions as well as in the context of a broader group of possible behaviors. Therefore, the first path states,

P_1: Attributing an unsuccessful sales call to a lack of effort is more likely to lead to plans to increase effort in a similar sales situation in the future than to plans to seek assistance, change strategies, avoid similar situations, or make no change.

We find a significant standardized LISREL estimate (Table 4) for the effort attribution to the intention to increase effort (P_1), and the relationship between the effort attribu-

TABLE 1

Measurement Development Results for Successful Sales Attributions and Behavioral Intentions:[a] Means, Standard Deviations, and Confirmatory Factor Analysis Estimates

Attributions	Mean	Standard Deviation	Standardized Loading	Item Reliability
Effort (.83, .86, .68)[b]	**5.01**			
I put forth the effort needed to make this sale.	5.06	.83	.95	.90
I worked hard and it paid off.	4.93	1.05	.63*	.40
I put in the necessary time to make this sale.	5.06	.94	.85*	.72
Ability (.89, .92, .78)[b]	**5.09**			
I have the necessary skills.	5.51	.90	.87	.75
I have the knowledge and skills required to be successful.	5.22	.85	.91*	.83
My sales abilities led to my success.	4.91	.90	.80*	.64
Task (.89, .81, .58)[b]	**3.19**			
Most sales reps find this type of sales call to be pretty easy.	3.50	1.42	.78	.61
This type of sales call is relatively easy for just about everyone.	2.98	1.31	.84*	.71
Most reps find this type of sale easy to close.	3.09	1.31	.96*	.93
Strategy (.88, .83, .67)[b]	**5.05**			
I picked the right strategy for this type of client.	5.08	.84	.83	.68
My sales strategy was right for this client.	5.03	.83	.91*	.82
I used the right strategy for this type of situation.	5.02	.85	.85*	.71
Luck (.93, .91, .78)[b]	**1.86**			
As luck would have it, the sale just happened.	1.95	1.13	.87	.76
It just worked out by chance.	1.81	1.03	.92*	.84
It was just good luck.	1.85	1.09	.90*	.81

Behavioral Intentions	Mean	Standard Deviation	Standardized Loading	Item Reliability
No Change (.77, .82, .61)[b]	**4.84**			
I would do the same thing.	5.09	.87	.72	.52
I will not change anything I did.	4.42	1.35	.67*	.45
I would do things pretty much the same.	5.00	.85	.89*	.80
Increase Effort (.93, .89, .73)[b]	**3.04**			
I will work much harder.	3.08	1.25	.90	.81
I would out greater effort.	3.04	1.32	.89*	.79
I will put in more time.	2.99	1.26	.93*	.86
Change Strategy (.86, .86, .66)[b]	**2.20**			
I will change the strategy that I use.	2.20	1.03	.81	.66
I would approach the client differently.	2.22	1.00	.81*	.66
I will try a different tactic with the client.	2.17	1.11	.86*	.74
Seek Assistance (.94, .91, .77)[b]	**2.46**			
I will seek advice in how to deal with the situation.	2.52	1.23	.91	.83
I would seek advice in dealing with the situation.	2.40	1.19	.91*	.83
I would get help from someone in the organization.	2.46	1.21	.92*	.85
Avoid Situation (.87, .90, .76)[b]	**1.53**			
I will avoid such situations in the future.	1.48	.81	.90	.81
I would avoid similar situations.	1.57	.87	.79*	.62
I would not call on that type of prospect again.	1.53	.90	.82*	.67

[a] Scale items were based on six-point (forced-choice) Likert scales (1 = "strongly disagree," 6 = "strongly agree").
[b] Entries in parentheses for multi-item constructs are Cronbach's alpha, composite reliability estimates, and average variance captured, respectively.
*$p < .001$.

tion and the intention to increase effort is significantly stronger than any of the alternative relationships. These results support the validity of this scale within this nomological network (see Table 5).

Ability attribution. As shown in Figure 1, a causal ascription associated with ability may lead to different behaviors depending on whether the salespeople believe they can do anything about the situation. For example, if

TABLE 2
Measurement Development Results for Unsuccessful Sales Attributions and Behavioral Intentions:[a] Means, Standard Deviations, and Confirmatory Factor Analysis Estimates

Attributions	Mean	Standard Deviation	Standardized Loading	Item Reliability
Effort (.94, .90, .75)[b]	**2.49**			
I didn't work hard enough.	2.63	1.32	.90	.82
I didn't put in the necessary time to make this sale.	2.51	1.32	.93*	.86
I didn't put forth the effort needed to make this sale.	2.47	1.28	.91*	.82
Ability (.94, .87, .69)[b]	**3.22**			
I need more skill and knowledge to be successful.	2.97	1.49	.88	.78
I need to improve my skills to be successful.	3.40	1.48	.94*	.88
I need to increase my knowledge in order to be successful.	3.07	1.37	.92*	.84
Task (.89, .80, .57)[b]	**3.67**			
This type of sales call is difficult for everyone.	3.69	1.45	.88	.78
Everyone finds this to be a tough selling situation.	3.57	1.41	.89*	.79
This was a difficult selling situation.	3.78	1.44	.79*	.63
Strategy (.92, .86, .68)[b]	**3.06**			
I used the wrong selling strategy for this type of situation.	3.04	1.39	.88	.77
I picked the wrong strategy for this type of client.	3.07	1.36	.92*	.85
My sales strategy was incorrect for this type of client.	3.07	1.37	.88*	.77
Luck (.90, .84, .63)[b]	**2.44**			
This situation was just an unlucky one.	2.49	1.35	.84	.70
It was just an unlucky break.	2.42	1.36	.96*	.92
It was just bad luck.	2.26	1.32	.81*	.66

Behavioral Intentions	Mean	Standard Deviation	Standardized Loading	Item Reliability
No Change (.88, .79, .56)[b]	**3.34**			
I would do the same thing.	3.57	1.44	.85	.72
I will not change anything I did.	2.95	1.36	.81*	.66
I would do things pretty much the same.	3.51	1.35	.86*	.73
Increase Effort (.94, .90, .76)[b]	**3.46**			
I would work harder at making the sale.	3.51	1.38	.92	.84
I would put out greater effort.	3.47	1.34	.91*	.82
I will put in more time.	3.41	1.33	.94*	.89
Change Strategy (.93, .88, .70)[b]	**3.89**			
I will change the strategy that I use.	3.94	1.30	.89	.79
I would use a different strategy with the client.	3.87	1.40	.93*	.86
I will try a different tactic with the client.	3.82	1.36	.88*	.77
Seek Assistance (.96, .91, .77)[b]	**3.55**			
I will get input from someone who may have had a similar experience.	3.69	1.47	.92	.84
I will seek advice in how to deal with the situation.	3.52	1.46	.95*	.90
I would seek assistance in dealing with this situation.	3.41	1.46	.95*	.90
Avoid Situation (.93, .91, .78)[b]	**2.09**			
I will stay away from situations like this one.	2.14	1.24	.87	.76
I will avoid such situations in the future.	2.08	1.17	.97*	.93
I would avoid similar situations.	2.07	1.12	.89*	.80

[a] Scale items were based on six-point (forced-choice) Likert scales (1 = "strongly disagree," 6 = "strongly agree").

[b] Entries in parentheses for multi-item constructs are Cronbach's alpha, composite reliability estimates, and average variance captured, respectively.

*$p < .001$.

TABLE 3
Construct Intercorrelations[a]

	1	2	3	4	5	6	7	8	9	10
1. Effort	1.00	.69**	–.04	.71**	–.34**	.41**				
2. Ability	.38**	1.00	–.06	.78**	–.39**	.37**				
3. Task	.00	.33**	1.00	.02	.35**	.05				
4. Strategy	.57**	.36**	.00	1.00	–.32**	.51**				
5. Luck	.09	.19**	.34**	.01	1.00	–.25**				
6. No change	–.53**	–.38**	.00	–.65**	.08	1.00				
7. Increase effort	.57**	.48**	.11	.34**	–.05	–.47**	1.00			
8. Change strategy	.45**	.42**	.11	.66**	.04	–.77**	.48**	1.00		
9. Seek assistance	.20**	.60**	.33**	.25**	.13	–.32**	.44**	.49**	1.00	
10. Avoid situation	.15*	.04	.32**	.04	.25**	–.03	–.06	.00	.05	1.00

[a]The numbers in the lower half of the matrix are the correlations for the unsuccessful attribution and behavioral intention scales. The numbers in the upper half of the matrix are the correlations for the successful attribution and behavioral intention scales.
*$p < .05$.
**$p < .001$.

FIGURE 1
Proposed Relationships Between Attributions and Behaviors

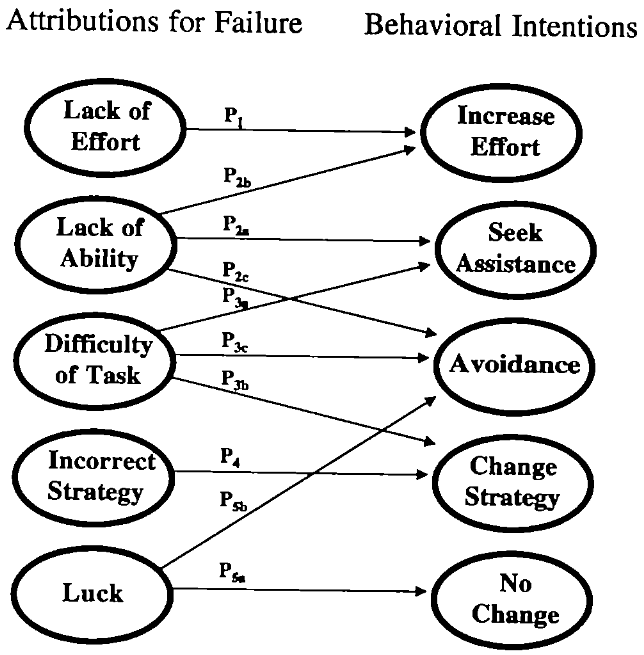

TABLE 4
Attributions[a] and Behavioral Intentions for an Unsuccessful Sales Experience: LISREL Estimates

	Standardized Estimate	t-Value
Effort → increase effort	.45**	7.14
Ability → seek assistance	.56**	8.68
Ability → increase effort	.31**	5.00
Ability → avoid situation	–.09	–1.27
Task → seek assistance	.15*	2.38
Task → change strategy	.12*	2.16
Task → avoid situation	.29**	3.72
Strategy → change strategy	.67**	10.51
Luck → no change	.08	1.07
Luck → avoid situation	.17*	2.36

Model Fit Statistics

χ^2	d.f.	p-Value	GFI	CFI	RMSEA
903.25	385	.000	.80	.92	.07

[a]Scale items were based on six-point (forced-choice) Likert scales (1 = "strongly disagree," 6 = "strongly agree").
*$p < .05$.
**$p < .001$.

salespeople believe that they can improve their selling skills or knowledge, they are likely to obtain assistance from a manager or other, more knowledgeable representatives. To increase their skill or knowledge in the event that no one is available to help, salespeople may simply seek to work harder (i.e., increase their effort) to compensate for their deficiency in this area. However, as other researchers suggest (Graham 1990; Teas and McElroy 1986), failure that is attributed to salespeople's innate ability or aptitude may also lead to the belief that there is no response in their repertoire to alter the course of failure; consequently, ability attributions may also lead to an avoidance of similar situations. In many sales situations, the sales representatives have the latitude to alter their call plans, thereby determining which customers/prospects are called on and which are not. As summarized in Figure 1, this suggests the following:

> P_2: Attributing an unsuccessful call to the lack of ability is more likely to lead to (a) plans to seek assistance in a similar sales situation in the future than to plans to change strategy or make no change, (b) plans to increase effort in a similar sales situation in the future than to plans to change strategy or make no change, and (c) plans to avoid similar situations in the future than to plans to change strategy or make no change.

Significant standardized LISREL estimates (Table 4) connect the lack of ability attribution with (1) the intention

TABLE 5

Attributions and Behavioral Intentions in an Unsuccessful Sales Experience: Path Coefficients and Chi-Square Difference Tests

P_o: Type of Attribution Made	Behavioral Intentions					Conclusion
	Increase Effort	Seek Assistance	Avoid Situation	Change Strategy	No Change	
P_1: Inadequate effort	.45[a]	N.S. and weaker[b] (25.20)	N.S. and weaker (10.97)	N.S. and weaker (13.52)	N.S. and weaker (123.09)	Accept P_1
P_{2a}: Lack of ability	c	.56[d]	N.S. and weaker (56.90)	N.S. and weaker (20.20)	N.S. and weaker (111.51)	Accept P_{2a}
P_{2b}: Lack of ability	.31	c	N.S. and weaker (20.76)	N.S. but as strong (1.66)	N.S. and weaker (64.27)	Reject P_{2b}
P_{2c}: Lack of ability	d	d	N.S.	d	d	Reject P_{2c}
P_{3a}: Difficult task	N.S. but as strong (3.09)	.15	c	c	N.S. and weaker (4.20)	Reject P_{3a}
P_{3b}: Difficult task	N.S. but as strong (1.94)	c	c	.12	N.S. but as strong (3.03)	Reject P_{3b}
P_{3c}: Difficult task	N.S. and weaker (7.06)	c	.29[c]	c	N.S. and weaker (8.51)	Accept P_{3c}
P_4: Incorrect strategy	N.S. and weaker (13.04)	N.S. and weaker (5.90)	N.S. and weaker (9.39)	.67	N.S. and weaker (190.87)	Accept P_4
P_{5a}: Bad luck	d	d	d	d	N.S.	Reject P_{5a}
P_{5b}: Bad luck	N.S. and weaker (13.40)	N.S. and weaker (4.49)	.17	N.S. but as strong (2.99)	N.S. but as strong (.89)	Reject P_{5b}

[a] These numbers are the standardized estimates for the significant LISREL path coefficients. A nonsignificant path is reported as N.S.

[b] "N.S. and weaker" entries should be read as follows: The effect of inadequate effort (the predictor) on seek assistance (the criterion) was a nonsignificant path and was weaker than the hypothesized effect of inadequate effort on increase effort (H_1).

[c] No chi-square comparison was made, because this attribution is hypothesized to be related to this behavioral intention in another hypothesis (e.g., H_{2b}).

[d] Chi-square comparison tests were performed for only hypothesized paths that were significantly different from zero (significant path coefficient).

to seek assistance (P_{2a}) and (2) the intention to increase effort (P_{2b}). The path between the lack of ability attribution and the intention to avoid the situation (P_{2c}) was not significant in the LISREL model. In the more stringent chi-square test of P_{2a} and P_{2b}, we find that the relationship between the lack of ability attribution and the intention to seek assistance is significantly stronger than the alternative relationships (i.e., those with avoiding the situation, changing strategy, or not making any changes in behavior), but the relationship between the lack of ability attribution and the intention to increase effort is not stronger than the alternative relationships. Consequently, we find only partial support for its convergent validity within this nomological network.

Task difficulty attribution. Although few researchers have focused on task difficulty attributions (see Teas and McElroy 1986), it seems reasonable to presume that environmental/task difficulty attributions may result in varying behavioral outcomes. Salespeople may believe that the situation is so difficult that there is nothing anyone can do to improve it, and as Weiner (1986) suggests, they may become angry and frustrated. Salespeople may decide to avoid such situations in the future. Alternatively, they may believe that a change of strategy will help or that someone with more experience and/or ability will be able to assist them. These possibilities suggest the following:

> P_3: Attributing an unsuccessful sale to the difficulty of the task or situation is more likely to lead to (a) plans to seek assistance in a similar sales situation in the future than to plans to increase effort or make no change, (b) plans to change strategy in a similar situation in the future than to plans to increase effort or make no change, and (c) plans to avoid similar situations in the future than to plans to increase effort or make no change.

The standardized LISREL estimates (Table 4) for these three proposed relationships are significant (indicating that the individual paths associated with this attribution are supported). Through the more stringent test of alternative relationships (chi-square tests; see Table 5), we find that the relationship between making the task attribution and the intention to avoid the situation is significantly stronger than the alternative relationships. The relationships between making the task attribution and the intention to change strategies or seek assistance were not significantly stronger than alternative relationships. Thus, this task difficulty scale fits the overall measurement model and demonstrates good measurement properties (discriminant validity and reliability); however, we find only partial support of its convergent validity within this nomological network.

Strategy attribution. Sujan's (1986) results suggest that salespeople who believe that they failed to make a sale because of an incorrect approach or strategy are likely to change their strategy in similar future sales situations (see Anderson 1983; Sujan 1986). We seek to confirm his findings by examining this relationship within the context of a broader range of attributions and subsequent behaviors:

> P_4: Attributing an unsuccessful sale to the use of an incorrect strategy is more likely to lead to plans to change strategy in similar sales situations in the future than to plans to increase effort, seek assistance, avoid similar situations, or make no change.

In strong support of the scale's validity, we find a significant standardized LISREL estimate (Table 4) for an incorrect strategy attribution to the intention to change strategy (P_4) relationship, and this relationship is significantly stronger than any of the alternative relationships.

Luck attribution. Attributing a sales call failure to bad luck leads to an attribution that is external and unstable according to the properties underlying attributions (Weiner 1986). Because causality is perceived to be outside of the salesperson's power, subject to change, and not subject to anyone's control, little can be done to change the situation. Therefore, salespeople who face such situations may not alter their behaviors. However, to avoid failure, salespeople may choose to avoid similar selling situations in the future. For example, they may choose not to call on a particular type of customer if they believe that the outcomes are somewhat random because of luck. This avoidance behavior is possible in many sales settings that are typified by sales representatives determining their own sales call patterns. Therefore,

> P_5: Attributing an unsuccessful sale to bad luck is more likely to lead to (a) plans not to make any changes in a similar sales situation in the future than to plans to increase effort, seek assistance, or change strategy and (b) plans to avoid similar situations in the future than to plans to increase effort, seek assistance, or change strategy.

The relationship between the bad luck attribution and the intention to avoid the situation (P_{5b}) is significant, whereas the path between the luck attribution and the intention not to make any changes (P_{5a}) is not significant. In the more stringent chi-square tests, we find that the relationship between the luck attribution and the intention to avoid the situation is not significantly stronger than the alternative relationships. Consequently, this luck scale fits the overall measurement model and demonstrates good measurement properties (discriminant validity and reliability); however, we find only partial support of its convergent validity within this nomological network.

Dispositional antecedents. In an effort to provide additional concurrent validity for the scales, we also tested the extent to which there is a relationship between the types of attributions salespeople make and their dispositional characteristics. On the basis of Teas and McElroy's (1986) discussion of these relationships, we chose to examine two dispositional characteristics in this validation effort: interpersonal control and personal efficacy.

Interpersonal control involves the degree to which people believe that they have an effect on other people in dyads or groups. People having a high level of interpersonal control believe that they have a great impact on (or control over) other people when involved in dyadic (e.g., one-on-one selling) or group settings (Paulhus 1983). Therefore, we expected that salespeople who have a high degree of interpersonal control would be more likely than others to attribute both their successes and failures to themselves rather than to other people or events.

According to Teas and McElroy (1986), people who have a high global self-esteem can be expected to perceive a life history of success. Therefore, when these people experience success, they consider it a consistent event and make stable attributions, both internal and external (i.e., an ability or easy-task attribution). Alternatively, when they experience failure, they consider it an inconsistent event and make attributions that are unstable. To test these relationships, we use personal efficacy (which is the confidence a person feels with regard to personal achievement of a specific task), because it captures the task- and goal-oriented nature of personal selling better than the more global self-esteem measure (Paulhus 1983).

Therefore, we expect to find the following:

P_6: Salespeople who are high in interpersonal control will make more internal attributions following performance, regardless of the level of performance, than salespeople who are low in interpersonal control.

P_7: Salespeople having higher personal efficacy will have tendencies to (a) make more stable than unstable attributions following success and (b) make more internal unstable than stable attributions following failure.

For the analysis, we split the sample into thirds on the basis of the respondents' scores on the personality trait scales and then compared the top third and bottom third of the sample by testing for the differences in the mean level of attributions (paired comparisons test). The results show that in both high and low performance situations, salespeople with a greater interpersonal control made significantly more internal attributions than salespeople with external interpersonal orientation (successful means of 5.31 versus 4.79, $p < .00$, and unsuccessful means of 3.22 versus 2.54, $p < .02$) (in support of P_6). In examining the relationship between salespeople's personal efficacy and attributions, we found that salespeople with high personal efficacy made significantly more stable attributions (mean of 4.12) than unstable attributions (mean of 3.98, $p < .08$) after a sales success (P_{7a}). However, following an unsuccessful sales experience, salespeople with higher personal efficacy still made more stable attributions (mean of 3.31, $p < .00$) than internal, unstable attributions (mean of 2.67, $p < .00$).

Discussion

Following the recommendations of Churchill (1979), we used a rigorous methodology to develop and test multi-item scales for measuring five types of attributions: effort attributions, strategy attributions, task difficulty attributions, ability attributions, and luck attributions. Using this same process, we also developed scales for measuring the intended behaviors that might stem from the attributions: increase efforts, change strategies, seek assistance, avoid the situation, or make no changes. The scales' reliabilities, as measured by coefficient alpha, are all well above recommended levels (.77 to .96). The shared variance among the constructs (scales) is less than the average variance of the items within the construct, which thus demonstrates strong discriminant validity for the scales. Finally, concurrent validity of the scales was demonstrated in a nomological network of relationships.

Research Contributions

Over the past two decades, researchers (Decarlo, Teas, and McElroy 1997; Johnston and Kim 1994; Sujan 1986; Teas and McElroy 1986) have demonstrated an interest in gaining a better understanding of the attributions salespeople make following their sales successes and failures. The primary contribution of this research was to develop a more complete set of scales that researchers or managers can use to measure salespeople's attributions for sales successes and failures. A second contribution was the development of the scales to measure salespeople's subsequent behavioral intentions. We believe that researchers must explore both salespeople's attributions for performance and their subsequent behavior to better understand the keys to improving sales performance. Finally, in the process of examining the concurrent validity of these scales, we have found several substantive findings worthy of note, which we discuss next.

Substantive findings. First, it appears that representatives do not fall prey to simply blaming their environment for their failures (the fundamental attribution error). On the contrary, they are likely to identify both internal (effort, ability, and strategy) and external (task and luck) factors to explain their failure. Perhaps experienced salespeople often believe that there is something they can do to change an unsuccessful situation into a successful one. Otherwise, they would avoid unsuccessful situations more often than is reported in this study. (In an unsuccessful situation, the lowest mean of 2.09 was reported for the avoidance behavior.) Consequently, this research prompts us to reconsider the applicability of the fundamental attribution error among salespeople.

Second, the general pattern of relationships between attributions and behavioral intentions shown in the model (Figure 1) was supported (the overall model fit was acceptable). As expected, salespeople who blamed their failure on their own lack of effort plan to put forth more effort in the next situation that is similar to the one in which they failed. Similarly, salespeople who believed that they used the wrong strategy planned to change their strategy. Both findings provide additional support for Sujan's (1986) work. Most salespeople who believed that their lack of ability contributed to the failure indicated that they would be more likely to seek assistance when facing a similar situation than to avoid the situation or redouble their efforts. Apparently, representatives are willing to admit when they believe that they are in over their heads, and they do not try to compensate for ability deficits by increasing their efforts. This result provides support for Sujan's (1986) general conclusion that successful salespeople work smarter rather than harder.

In addition, when salespeople believe they failed because the situation was fraught with difficulties, they indicate that they will not seek assistance or try a new strategy; rather, they plan to avoid such situations in the future. This is consistent with Teas and McElroy's (1986) suggestion that when salespeople believe they have failed because of factors beyond their control, this has a negative impact on their expectancies. It is interesting to note that if salespeople make internal, stable attributions (lack of ability) for failure, they are blaming themselves for the failure; therefore, they intend to seek assistance to improve their own abilities. In contrast, if they make external, stable attributions (task difficulty) for failure, they may believe that they cannot do anything about the situation, and therefore they plan to avoid such situations. This represents a difficult coaching scenario for managers, because they must convince their representatives not to avoid these situations.

As expected, salespeople having high personal efficacy made more stable than unstable attributions in a successful situation, in support of Teas and McElroy's (1986) proposition. However, contradicting Teas and McElroy (1986), salespeople with high personal efficacy also view the causes of their failings as stable. It is possible that efficacious salespeople perceive their failure as so inconsistent with normal events that they attribute it to events that are beyond their immediate control, such as the nature of the task or their ability in that particular situation.

Managerial Implications

This research provides a useful set of scales for measuring attributions and behavioral intentions among field sales representatives. The scale development process yields items appropriate for a successful sales situation as well as an unsuccessful sales situation. The tests of concurrent validity offer several points that should be of interest to managers.

Our research demonstrates that the attributions salespeople make for their successes and failures are significantly related to their behavioral intentions in future sales interactions. Because the primary role of sales managers is to direct and improve the performance of salespeople, they should recognize the importance of the salespeople's attributions for success and failure. If salespeople make incorrect attributions for their failures, it will be more difficult for a manager to help those salespeople improve performance than if the representatives make correct attributions.

However, this study highlights the complexity of the attributional processes and the links between that process and subsequent behaviors. It is not easy for sales managers to know what attributions their salespeople are making for successes and failures or whether those attributions are correct. Sales managers should not assume that they know what attributions their salespeople are making. This becomes most critical when a salesperson has failed.

The scales developed in this study will enable managers to assess more accurately which types of attributions salespeople are making and what their intentions are with regard to the situations in which they are not successful. When an assessment has been made, sales managers should discuss the results with their salespeople. Salespeople should be asked to detail what they believe are the causes for their unsuccessful outcomes and what future actions they intend to take with regard to that or similar situations. If sales managers agree with the salespeople's attributions and intentions, they can reinforce them by agreeing or by offering encouragement and assistance. If sales managers believe that salespeople are making incorrect attributions and/or behavioral choices, then the sales managers must help the salespeople understand the correct causes of the unsuccessful sales encounters and/or the appropriate actions to take. Otherwise, the salespeople are not likely to improve their performance.

The validation work also suggests that companies should hire people who have high interpersonal control, because these people are more likely to make internal attributions than are people with low interpersonal control. Also, with regard to their subsequent behavior, they are less likely to avoid difficult situations. In contrast, employees with high personal efficacy may need guidance in accepting responsibility for choosing the wrong strategy or for not working hard enough.

Limitations and Extensions

In this study, we validated the scales by examining the attributions and behavioral intentions that salespeople make after a particular interaction with a customer. However, we did not examine whether or not salespeople have attributional tendencies and subsequent patterns of behavioral tendencies across multiple sales interactions with different customers or even with the same customer. Additional studies are needed to further understand what circumstances may lead to particular attributional patterns and whether these patterns are stable across situations.

Also, in this study we did not ascertain whether the salespeople's attributions were correct or incorrect. Another valuable use for these scales would be to examine whether more successful salespeople make more correct attributions than their less successful counterparts. It would be helpful for sales managers to know whether more successful representatives' attributions have greater veracity than those of less successful sales representatives.

In conducting future work in this area, researchers might examine actual behaviors (rather than behavioral intentions) and determine how those behaviors are related to attributions. Ultimately, we are interested in behaviors, and the behavioral intention measures that we developed are not a perfect predictor of behaviors. Therefore, a study that measures actual behavior following an attribution would overcome this limitation.

Another extension to consider for this research area is to integrate attribution theory with rational decision making. In a sales success scenario, researchers might examine whether representatives choose to reduce effort in an attempt to shift their resources (i.e., time) to other activities to further enhance their performance.

Finally, because the study was conducted in the financial services industry, researchers can use these scales to investigate other types of selling, for example, business-to-business or consumer packaged goods sales. Also, our sample excluded salespeople who had worked for the company for less than one year. Understanding the attribution patterns of younger, less experienced salespeople who are more likely to experience failure is as important as understanding the patterns for more experienced salespeople.

APPENDIX A

Attribution Items: Exploratory Factor Matrix for a Successful Sales Call[a]

	Component				
Effort Attribution Items	1[b]	2	3	4	5
I worked hard and it paid off.					.604
I tried very hard to make this sale.					.832
I put out a lot of effort for this sales call.					.806
I put in the time needed to make the sale.					.667
I gave the effort needed to make the sale.	.463				.663
Ability Attribution Items					
My skills/knowledge made me succeed on this type of call.			.675		
I have the skills to be successful.			.824		
I have the necessary skills.			.773		
I have the knowledge and skills for success on this type of call.			.838		
My sales abilities led to my success.			.687		
Task Attribution Items					
Most reps find this type of call to be pretty easy.				.826	
This type of sales call is relatively easy for just about everyone.				.877	
It wasn't a very tough selling situation.				.742	
This was an easy selling situation.				.790	
Most reps find this sale easy to close.				.908	
Strategy Attribution Items					
My sales strategy was effective for this customer.	.764				
An appropriate selling strategy was used for this situation.	.778				
I picked the right strategy for this client.	.811				
My strategy was right for the client.	.807				
I used the right strategy for the situation.	.801				
Luck Attribution Items					
It was just a lucky break.		.810			
I was lucky.		.912			
Luckily, the sale just happened.		.819			
It just worked out by chance.		.856			
It was just good luck.		.910			

[a] Principal component analysis using varimax rotation (Kaiser normalization).
[b] Only loadings above .40 are shown.

APPENDIX B

Attribution Items: Exploratory Factor Matrix for an Unsuccessful Sales Call[a]

	Component				
Effort Attribution Items	1[b]	2	3	4	5
I didn't work hard enough.		.401			.730
I really did not try very hard.					.846
I didn't put out enough effort for this sales call.					.863
I didn't put in the necessary time to make this sale.					.890
I didn't put forth the effort needed to make this sale.					.658
Ability Attribution Items					
I need more skill and knowledge to be successful in this type of sales call.	.876				
I lack some of the necessary skills for this type of call.	.845				
I need to improve my skills to be successful in this type of call.	.902				
I need to increase my knowledge to be successful in this type of call.	.923				
I need to learn more in order to be successful in this type of call.	.915				

APPENDIX B
Continued

	Component				
Task Attribution Items	1[b]	2	3	4	5
Sales reps find this type of sales call to be difficult.				.826	
This type of sales call is difficult for everyone.				.869	
Sales reps struggle with this situation.				.891	
This was a difficult selling situation.				.854	
Everyone finds this to be a tough selling situation.				.830	
Strategy Attribution Items					
My sales strategy was incorrect for this client.		.807			
A different selling strategy was more appropriate for this situation.		.870			
I used the wrong selling strategy for this type of sales call.		.840			
The sales strategy I used was not effective for this customer.		.878			
I picked the wrong strategy for this type of client.		.854			
Luck Attribution Items					
It was just an unlucky break.			.835		
This situation was just an unlucky one.			.909		
As luck would have it, the sale just didn't happen.			.869		
The circumstances surrounding this call were unlucky.			.936		
It was just bad luck.			.908		

[a] Principal component analysis using varimax rotation (Kaiser normalization).
[b] Only loadings above .40 are shown.

APPENDIX C
Behavioral Items: Exploratory Factor Matrix for a Successful Sales Call[a]

	Component				
Increase Effort Behavior Items	1[b]	2	3	4	5
I would put forth more time and effort.	.721				
I would work harder at making the sale.	.796				
I would work much harder.	.880				
I would put out greater effort.	.846				
I would put in more time.	.843				
Seek Assistance Behavior Items					
I would seek assistance from someone else in our company.		.745			
I would get input from someone who may have had a similar experience.		.773			
I would seek advice in how to deal with the situation.		.838			
I would seek assistance in dealing with this situation.		.852			
I would get help from someone in the organization.		.848			
Avoid the Situation Behavior Items					
I would stay away from situations like this one.			.817		
I would avoid such situations in the future.			.885		
I would avoid similar situations.			.795		
I would not call on that type of prospect again.			.847		
I would not put myself in that situation again.			.748		
Change Strategy Behavior Items					
I would change the strategy that I use.					.682
I would use a different strategy with this client.					.642
I would approach the client differently.					.748
I would adapt my strategy.					.648
I would try a different tactic with the client.					.531

APPENDIX C
Continued

	Component				
Make No Change in Behavior Items	1[b]	2	3	4	5
I would do the same thing.				.575	
I would not change anything I did.				.782	
I would do things pretty much the same.				.663	
I would not change anything very much.				.746	
I would not do anything differently.				.723	

[a] Principal component analysis using varimax rotation (Kaiser normalization).
[b] Only loadings above .40 are shown.

APPENDIX D
Behavioral Items: Exploratory Factor Matrix for an Unsuccessful Sales Call[a]

	Component				
Increase Effort Behavior Items	1[b]	2	3	4	5
I would put forth more time and effort.			.777		
I would work harder at making the sale.			.811		
I would work much harder.			.865		
I would put out greater effort.			.871		
I would put in more time.			.861		
Seek Assistance Behavior Items					
I would seek assistance from someone else in our company.	.877				
I would get input from someone who may have had a similar experience.	.899				
I would seek advice in how to deal with the situation.	.909				
I would seek assistance in dealing with this situation.	.919				
I would get help from someone in the organization.	.909				
Avoid the Situation Behavior Items					
I would stay away from situations like this one.		.895			
I would avoid such situations in the future.		.934			
I would avoid similar situations.		.944			
I would not call on that type of prospect again.		.904			
I would not put myself in that situation again.		.921			
Change Strategy Behavior Items					
I would change the strategy that I use.					.786
I would use a different strategy with this client.					.786
I would approach the client differently.					.778
I would adapt my strategy.					.744
I would try a different tactic with the client.					.728
Make No Change in Behavior Items					
I would do the same thing.				.799	
I would not change anything I did.				.696	–.402
I would do things pretty much the same.				.755	–.401
I would not change anything very much.				.792	
I would not do anything differently.				.775	

[a] Principal component analysis using varimax rotation (Kaiser normalization).
[b] Only loadings above .40 are shown.

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Füsun F. Gönül, Franklin Carter, Elina Petrova, & Kannan Srinivasan

Promotion of Prescription Drugs and Its Impact on Physicians' Choice Behavior

The authors investigate whether and how pricing and promotional activities influence prescription choice behavior using a comprehensive panel of physicians and data on competitive price and promotional activities. The authors find that physicians are characterized by fairly limited price sensitivity, detailing and samples have a mostly informative effect on physicians, and physicians with a relatively large number of Medicare or health maintenance organization patients are less influenced by promotion than other physicians are.

To the best of our knowledge, this article is the first attempt at an exploratory study on the effects of a widely used competitive marketing practice in the prescription drug industry: personal detailing to physicians and dispensing free samples by pharmaceutical companies' sales representatives. Considering that there is not much prior research in this area (partly due, perhaps, to difficulties related to data collection, confidentiality issues, and so forth), we view the primary contributions of our findings to be its initial insights into this matter and its guidance for further research. The health care industry in general and the prescription drug industry in particular employ an unusual combination of marketing effort, namely, personal detailing and free samples. Studying the impact of these marketing activities accomplishes two objectives: First, we can determine their effectiveness from the firm's perspective, and second, we can infer their implications for consumers and thus shed light on related public policy issues.

In the changing health care environment, managed care organizations (MCOs) play an important role in cost containment. Among other things, they encourage physicians to be more cost-conscious and gradually replace more drastic treatment options, such as surgery, with preventive medicine and pharmaceutical treatments whenever possible (Miller and Luft 1994).

Because health care is largely viewed as a social good, marketing expenditures may be viewed as wasteful or excessive unless the marketing activity benefits the consumers. Intense personal detailing to physicians by prescription drug manufacturers is a time-honored practice. Drawing a natural parallel between detailing drugs and advertising consumer goods, it can be argued that detailing, similar to advertising, is both a market power tool and an information source (see Nelson 1974). However, as prior marketing studies have indicated, these two roles of advertising have a fundamentally different impact on consumers' price sensitivity, decreasing it in the former case and increasing it in the latter. Therefore, we consider it useful to glean insights into the mechanisms driving product choice in the prescription drug market and to study these mechanisms' effects on price sensitivity.

The marketing strategies employed in the pharmaceutical industry sharply contrast with those typically adopted in other markets. One of the primary reasons for the difference is that in the prescription drug market there is a distinct breach in the traditional buying decision process: The decision maker is the physician, who chooses among an array of drug alternatives, but it is the patient who takes the drug and ends up paying (either out of pocket or through health insurance coverage) for the choices made by the physician. Therefore, it is conceptually harder to define the customer in such transactions: The intermediary role played by the physician cannot be ignored.

The marketing literature is replete with examples in which the chooser is not the user. Organizational buying, toy purchasing, and textbook buying provide other examples of situations in which the decision maker is necessarily different from the user (Kotler 2000). The complexity of industrial buying situations, in which the buying center makes the decisions on purchases of goods and services that the employees of the company use, are discussed by Bonoma (1982). Krapfel (1985) puts forth a model for the advocate role of organizational buyers. In a similar vein, we expect that in the marketing of prescription drugs there is an important distinction from the traditional marketing practices studied so far, and we suggest that this warrants additional research.

The involvement of physicians as key decision makers is the reason that they are the focus of most promotional efforts of pharmaceutical companies. In addition to detailing, physicians are often supplied with substantial amounts of free products for direct assessment of the effectiveness of

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a drug, which they can then dispense to patients at no cost. Therefore, from the manufacturer's point of view, physicians are the customers. We believe that physicians have strong incentives to keep their patients satisfied with the provided medical service.

Physicians may be viewed more favorably by their patients if they demonstrate additional responsiveness and empathy by considering the patients' financial situation and the specifics of their health insurance plan when choosing among drugs of similar efficacy for a patient's medical condition (which should be the issue of prime concern). Often the recourse of patients who doubt the judgment of their health care providers is to seek another opinion. Even though switching physicians on the basis of an unsatisfactory experience related to drug costs is unlikely, potential loss of patients' patronage could be a reasonable concern to physicians regardless of its causes.

It is conceivable that physicians can infer a patient's willingness and ability to pay a higher price from either the type of insurance held (e.g., private insurance versus Medicare) or other cues revealed during the discussion with the patient (e.g., if the patient asks how expensive the drug is or indicates price concerns in some other way). Accommodating patients' price sensitivity while accounting for their medical conditions, along with giving free samples to some patients, may be considered a tangible indication of care and involvement that can further enhance the relationship between physician and patient. However, it should be noted that patients' potential difficulty in making price comparisons with other drugs after a prescription is written and filled could dampen the proposed vicarious price sensitivity exhibited by a physician who wants to demonstrate goodwill to the patient. It might often be sufficient to make the patients believe that their price concerns have been addressed in the best possible way given their condition, which thus becomes a credence issue.

Conversely, it can be argued that physicians' utility functions might not always match those of their patients because of constraints imposed by MCO formularies or the increasing involvement of patients that has been enhanced by direct-to-consumer (DTC) advertising of prescription drugs. As noted in the health care literature, physicians are frequently asked to justify not only the drugs they prescribe but also the ones they choose to dismiss. These extra pressures on physicians from MCOs, patients, and manufacturers' sales representatives create a challenging environment in which the prescription decision is made.

Several other pertinent issues should be noted at this point. First, for the physician there is a trade-off between the benefits acquired through time spent with sales representatives (who provide them with information and free samples) and the opportunity cost of that time, which can be spent otherwise (seeing more patients, reading professional materials, conferring with colleagues, or simply enjoying leisure time). Second, information about new drugs and their applications and side effects is largely available from other sources physicians have access to: medical symposia and conferences, research articles, and medical journals, to name a few. Third, there is anecdotal evidence that inertia and loyalty to specific drugs play some role in the choice of a drug prescribed by a physician. All these factors can render the influence of detailing and samples much less important.

We combine several large data sets obtained from Scott-Levin Inc., a pharmaceutical consulting firm. The data sets are collected from nationally representative samples of physician audits, personal detailing audits, and retail pharmacy audits. The prescriptions are written for a specific therapeutic state that is chronic and relatively more common among the elderly population. The end result is a unique data set for this field that combines patient's insurance coverage data, retail price data, detailing and samples data, and the physicians' prescription choice data.

In the next section we set up the background and hypotheses pertaining to pharmaceutical prices, promotion, and insurance coverage. We then describe the data sets and outline the model and the estimation method. In the following section, we present the results of our estimation, and then we discuss managerial and public policy implications and state the limitations of the study. We conclude with a summary of our findings and directions for further research.

Background and Hypotheses

Price Effects

A common belief in the theoretical literature is that physicians are not price sensitive when selecting which drugs to prescribe, because they act as the patients' agents and the cost savings accrue to the patient, not to the prescriber (see, e.g., Leffler 1981). The list of empirical studies on physicians' price sensitivity for prescription drugs is relatively short, and the evidence is inconclusive. In a controlled health insurance experiment, Newhouse (1993) finds no conclusive evidence that the average cost of prescriptions written by physicians varies according to the patients' insurance coverage. Thus, the study reports no evidence that physicians prescribe lower-cost drugs to patients who are covered by less generous insurance plans. However, Newhouse suggests that this inconclusive finding could be due to the averaging method used over the duration of the experiment. Hellerstein (1997) examines physicians' preferences for brand-name versus generic drugs. She finds that physicians with a relatively large number of patients who have health maintenance organization (HMO) affiliations are more likely to prescribe generic drugs.[1] Hellerstein speculates that this finding can be attributed to the cost-containment emphasis of HMOs and the self-selection of low-cost physicians to HMOs. Alternatively, she suggests that HMO physicians may be more in the habit of writing generic prescriptions because they are sensitive to price. In contrast, she finds that the individual patient's HMO affiliation does not play a role in the prescription of generic drugs. Hellerstein's findings about the patient's affiliation are inconsistent with those from the physicians' pool of patients' affiliations. She explains this inconsistency by the use of dummy variables

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[1] We use the term "HMO" as in the cited study. The two major types of managed health care plans are HMOs and preferred provider organizations.

(generic versus brand name) instead of actual drug prices in the model.

In the changing health care industry, however, prices may be expected to influence the choice of drugs prescribed by physicians. Prescription drug prices have increased at a rate higher than inflation, and progressively patients defray a higher percentage of the drugs' cost. Physicians are increasingly competing for patients. Therefore, we expect that physicians, trying to accommodate their patients' price sensitivity, will act in a price-sensitive way even though they do not directly bear the cost of the drug.

Furthermore, bearing in mind the importance of prescribing the right drug that would lead to efficacious treatment with few side effects or complications given a patient's condition, physicians might choose to forgo the price considerations if they believe that price is an indicator of quality and the patient's condition warrants a higher efficacy treatment. Prior research in marketing has shown that both price and advertising can be perceived as signals of quality (Milgrom and Roberts 1982, 1986; Nelson 1974). If this is the case and physicians are regarded as customers in a situation of incomplete information (in which the uncertainty comes from the unknown efficacy of the detailed drug for a patient's treatment), then it can be expected that physicians might consider the higher price as a credible signal of quality. In addition, prior research on the effects of advertising as a signal of quality for experience and credence goods has shown that the incidence of advertising (of which detailing and free samples are a form) can also be perceived as an indication of higher quality because of the costs and effort associated with it (Nelson 1974).

Prescription products are similar to credence goods whose immediate effects are obvious neither to the user (the patient) nor to the decision maker (the physician). These effects often must be taken on faith, especially for maintenance drugs such as the ones we study. Maintenance drugs are taken for chronic diseases, so there is often no immediately obvious effect from using the drug. In such cases, placebo effects are common, as is cited in medical journals. This creates a situation in which patients and physicians continue to use the drug that the patient perceives as working. There is anecdotal evidence from physician discussions that even when the main ingredients are known to be the same in competitive brands of drugs, physicians keep prescribing the same drug for refills if the drug has been reported as working by the patient, so that possible placebo effects of the original brand remain undisrupted. If the physician believes that a drug works in a particular patient's case, there is no reason to deviate from it in subsequent prescriptions because of the risks associated with switching treatment. Therefore, in these situations price would become less of a concern.

Many generic products do not capture the lead in the pharmaceutical industry because of the strong (and positive) price–quality signaling effects. Generic aspirin is a case in point. It has a low market share despite having a low price and the same ingredients as those found in the leading brands. Its lower price makes it less attractive.

Physicians, being intermediaries in the buying decision process of prescription drugs (a position reflecting their key role between the drug manufacturer and the patient who is the ultimate consumer), are often placed in a situation of uncertainty as to which drug is the best for each particular patient's case. Considering the broad substitutability among many drugs on the market and the similar claims their manufacturers make, the prescription choice decision, often critical, is increasingly harder to make. Physicians might regard a higher price as a signal of quality, a price premium justified by the higher efficacy of the drug, and therefore prescribe the more expensive drug when drug efficacy is of prime consideration.

The type of formulary used by a particular HMO specifies not only which drugs are suggested by the HMO but also what percentage of the drug cost will be covered by the HMO if the prescribed drug is on the HMO formulary.[2] The diversity of co-payment schemes and the variable degree of restrictions on drug coverage outside the formulary further complicate the issue of price sensitivity and its importance to both the physician and the patient as a result of the shared-cost effect and the constraints imposed by formularies.

There is a host of diverging arguments that lead to opposite implications about physicians' price sensitivity. Therefore, instead of strongly arguing one way or another about the price effect, we believe that it is best to let the data suggest the impact of price on physicians' choice behavior.

> Empirical Question 1: Do direct promotional effects (detailing and free sampling) by pharmaceutical companies affect the price sensitivities of physicians who operate in regulated managed care environments?

Insurance Effects

Patients with private health insurance pay a higher premium and enjoy a wider selection of physicians and hospitals. Patients with HMO insurance tend to have generous prescription drug coverage. In addition, drugs that are on HMO formulary lists enjoy higher prescription rates, as discussed previously.

In contrast, most Medicare patients are retirees with limited income who must pay for prescription drugs themselves, unlike patients with HMO or private insurance who carry prescription coverage. Therefore, Medicare patients are expected to be price sensitive, and their physicians are expected to be more responsive to drug prices than other physicians are. We expect that the physicians' vicarious price sensitivity will be reinforced when patients hold Medicare insurance.

Therefore, we expect the interaction effect between price and Medicare to be negative, decreasing the prescription probability of a drug. That is, we hypothesize that if patients have Medicare coverage, physicians are more price sensitive than if the patients have private or HMO coverage.

> H_1: The type of health insurance will have a moderating effect on the prescription probability of a drug, increasing physicians' price sensitivity when patients have Medicare coverage than when they have private or HMO insurance

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[2] A formulary is a continuously revised list of medications that is subject to the approval of the MCO and is intended to optimize patient care through rational selection of drugs.

Impact of Detailing and Free Samples

Sales representatives in the pharmaceutical industry (detailers) offer information on generic and current modes of therapy, the appropriate drug usage, indications, contraindications, and side effects. In addition to information about drug usage and positioning, detailers give retail price information and dispense free samples. Physicians are expected to benefit from spending time with sales representatives, because the information they receive ultimately leads to higher patient recovery rates that speak well of the physicians' competence and expertise.

Several studies on advertising have suggested that when used as a persuasive tool, advertising affects the consumer by focusing on the differentiating features and attributes of the product and thus reduces price sensitivity. In contrast, advertising that provides information about the existence and availability of competitive products broadens the consideration set and thus increases price sensitivity (see, e.g., Mitra and Lynch 1995; Nelson 1970, 1974; Nerlove and Arrow 1962).

Yet another aspect of direct drug promotion adds to the complexity of the issue. Prior research (Mitra and Lynch 1995) has attempted to reconcile the opposite effects of reminder advertising (which broadens the size of the consideration set and thus increases price sensitivity) and differentiating advertising (which strengthens the preference for a brand and thus decreases price sensitivity). We believe that detailing and samples can induce both reminder and differentiating effects, which makes Mitra and Lynch's (1995) work relevant for our study. They find that for product markets in which consumers must rely on memory to generate alternatives, increased advertising of brands may increase price sensitivity. Conversely, in the case of point-of-purchase information, the net effect of advertising is to decrease price sensitivity. Although it is clear that physicians retrieve drug alternatives from memory before writing a prescription (rather than check the contents of their medicine cabinet), free samples left by drug representatives after the detailing session might act as long-term reminders of the existence of the drug and dampen the increased price sensitivity effect.

There is a natural similarity between advertising in general and detailing and samples in the prescription drug industry. Because physicians receive visits from the representatives of competing pharmaceutical companies, we expect that the persuasive aspect of the sales presentations will be mitigated by physicians' increased awareness of competitors' prices. In other words, we believe that the persuasiveness of detailing and sampling activity will be canceled out across the visits of different sales representatives, making the increased awareness of drug features and availability the only remaining effect to influence (increase) physicians' price sensitivity. However, we leave this as an open question to address in our analysis:

> Empirical Question 2: Do detailing and samples increase physicians' price sensitivity as a result of increased awareness of competitors' prices or decrease it as a result of enhanced perception of product differentiation?

The emergence of managed care has reduced the impact of detailers; however, they are still a strong source of information in the promotion of drugs (Ziegler, Lew, and Singer 1995). There is an unresolved debate whether detailing is a warranted or a redundant promotional activity. The federal government and consumer advocates often criticize pharmaceutical firms for what they consider excessive and wasteful expenditure in detailing and promotion. These expenses, the critics argue, unnecessarily raise the prices of prescription drugs.

Pharmaceutical lobbyists respond that promotional expenditures are necessary to compete effectively in the marketplace, that the generated extra revenues can be allocated to research and development, and that prescription drug expenses are only one-seventh of the total health care costs (PhRMA 1994). In the pharmaceutical advertising literature, Leffler (1981) and Hurwitz and Caves (1988) argue that advertising increases competition and reduces prices. Hence, they posit that limiting advertising expenditures may have negative social welfare effects. Even though our article will hardly help solve the controversy, we hope it will shed light on the effects of detailing on physicians and ultimately on patients' and social welfare.

In the prior health care literature, Berndt and colleagues (1994) find that detailing is critical to increasing industry sales of anti-ulcer drugs. In marketing, there is a large amount of literature on personal selling, albeit in contexts different from our focus on the effects of detailing to physicians. Detailing is a valuable, though not unique or entirely accurate, source of information for physicians, providing them with useful product knowledge about drug toxicity, efficacy, and the cost to the patient. To that extent, detailing may enable physicians to make careful trade-offs between costs and benefits for each patient, thus offering a more customized service and enhancing social welfare.

The effects of samples in nonpharmaceutical contexts have been studied in more detail (Marks and Kamins 1988). However, dispensing samples in the health care industry is different from doing so in nonpharmaceutical markets, because drug samples are often accompanied by detailing and accepting them might imply some commitment to prescribe the product in the future. In addition, samples can be the only visible reminder of the product after the sales representative has left the physician's office. Thus, samples can have a more lasting influence on the physician because they add tangibility to the sales presentation.

> H_2: Detailing and samples will have positive main effects on the prescription probability of a drug.

Although exposure to detailing may be useful for the physician, it inevitably takes away from valuable work time. Any communication with the physician—direct mail, direct selling, continuing medical education, show displays, public relations, wellness promotions—competes for share of the physician's time and mind. Consequently, we anticipate that the marginal impact of cumulative detailing and samples will diminish in its effectiveness. There may be a threshold level of detailing and samples beyond which the effect becomes negative.[3] Physicians may tire of excessive detailing and samples and may be less willing to prescribe the drug.

> H_3: Detailing and samples will have diminishing marginal effects on the prescription probability of a drug.

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[3] Van Zandt (1993) conducts a survey of physicians with hypothetical scenario data and finds that the main effect of samples is positive with diminishing returns.

Impact of Insurance Coverage on the Effects of Detailing and Sampling

Previously we argued that physicians will exhibit greater price sensitivity when prescribing drugs to Medicare patients. Recall that these patients spend a higher percentage of their income on health care. In this context, we set out to examine carefully the role of detailing and samples with Medicare insurance as a moderating factor. The presumption that physicians carefully trade off cost and benefit while prescribing drugs to this extremely price sensitive segment would manifest itself in a more mitigated impact of detailing and samples on the prescription probabilities for the Medicare segment (negative interaction effect). Any absence of such interaction or the presence of a positive interaction may lend some credence to the argument that these costly marketing activities merely convince physicians to prescribe the drug, thus raising justifiable concerns about social welfare.

Physicians who prescribe to HMO patients may also be less susceptible to the promotional efforts of sales representatives because of the restrictive HMO formulary lists. Therefore, we also expect negative interaction between HMO coverage and detailing and samples.

> H_4: Compared with private insurance, Medicare and HMO coverage will have a negative moderating effect on detailing and samples, reducing their impact on the prescription probability of a drug.

We summarize our hypotheses in Table 1. In the "Methodology" section, we define the coefficients we use in Table 1.

Data

For a comprehensive analysis of the impact of marketing on prescription drug choices, a panel of physicians with information on their exposure to personal detailing and the prescription choices made is needed. The physician-level data sets provided by Scott-Levin Inc. are uniquely comprehensive in this regard.[4] For this study we combine three large data sets from Scott-Levin: drug and diagnosis data, personal selling data, and retail price data.[5]

The drug and diagnosis data include the physician's identification number, the date the prescription was written, the product code, and the patient's type of insurance. The physicians in the panel kept track of their patients' visits between January 1989 and December 1994. Because physicians' time is valuable, they are asked to fill out survey sheets for a typical week of the month. This gives a sample of patient visits per physician, but it does not contain information about every visit. However, this does not bias our choice model results, because we do not model physicians' longitudinal choice behavior, such as brand switching or brand loyalty.

No physician in our sample prescribes the same drug 100% of the time. Even when we relax the brand loyalty criterion to prescribing the same drug at least 70% of the time, we find that only three physicians could be described as loyal by this criterion. This tentative result indicates that less than 2% of the sample shows evidence of brand loyalty, but again, the data set does not allow for a thorough examination of this issue. However, we do not rule out the possibility that though the majority of physicians appear to be switchers in their overall prescription behavior across patients, they might be persistent in repeatedly prescribing a drug to each patient.

Personal selling data were collected for the same time period as was the first data set. The physicians were asked to keep track of the detailing (minutes) and samples (number of containers) they received from sales representatives for drugs for specific therapeutic states and the dates they received them. We chose a therapeutic state that is a relatively common chronic condition among the elderly population. A physician may prescribe one of seven different products for this therapeutic state.

Retail price data are available for a shorter time span, from January 1991 to December 1994. The data set uses a panel of more than 800 pharmacies throughout the United States. The data contain the full price the pharmacy charges for the prescription drug, regardless of co-payment situations, as well as how the prescription was paid by the consumer: personally or by an insurance plan.

Table 2 displays descriptive statistics for 157 physicians and their patients' visits (related to the specific therapeutic state we have chosen) over a period of four years. The top three products rank high in samples and detailing minutes as well as in market share. Insurance plan frequencies in the data are as follows:

1. Private: private insurance (44%),
2. HMO: HMO or preferred provider organization (13%), and

TABLE 1
Summary of Hypotheses

Empirical Questions and Hypotheses	Effect
Empirical Question 1	$\beta_P < 0$ or $\beta_P > 0$
H_1	$\beta_{P-\text{Medicare}} < 0$ $\beta_{P-\text{Medicare}} < \beta_{P-\text{HMO}}$
Empirical Question 2	$\beta_{DP} < 0$ and $\beta_{SP} < 0$ or $\beta_{DP} > 0$ and $\beta_{SP} > 0$
H_2	$\beta_D > 0$ $\beta_S > 0$
H_3	$\beta_{D-\text{Sq}} < 0$ $\beta_{S-\text{Sq}} < 0$
H_4	$\beta_{D-\text{Medicare}} < 0$ $\beta_{S-\text{Medicare}} < 0$ $\beta_{D-\text{HMO}} < 0$ $\beta_{S-\text{HMO}} < 0$

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[4] Most empirical studies on the pharmaceutical industry use data sets from IMS International, which collects data on the health care industry. However, the data set poses certain problems. See Berndt and colleagues (1994, Appendix) for a detailed account of the quirks in the IMS data.

[5] Both the therapeutic state and the brand names of the prescription drugs are kept confidential at the request of Scott-Levin Inc. Although there are a few generic drugs for the therapeutic state, their market share is less than 1%. Therefore, we exclude them from our study without loss of substantial information.

TABLE 2
Descriptive Statistics

Rx Product	Frequency of Choice (%)	Price ($)	Cumulative Discounted Sum of Sample Containers	Cumulative Discounted Sum of Detailing Minutes
Product 1	20.06	34.20 (.58)	32.28 (36.50)	13.55 (14.53)
Product 2	31.65	42.25 (1.83)	31.00 (31.14)	9.41 (10.42)
Product 3	23.75	50.49 (4.18)	31.74 (32.25)	12.83 (13.62)
Product 4	10.42	35.73 (1.90)	24.24 (21.39)	8.82 (8.10)
Product 5	8.07	34.84 (1.05)	21.62 (33.09)	7.71 (9.46)
Product 6	2.63	31.75 (.90)	18.06 (23.07)	8.26 (6.73)
Product 7	3.41	32.83 (.54)	26.25 (41.77)	8.32 (10.67)

Notes: The number of observations is 1785 patient visits. The sample spans January 1991 through December 1994. Mean values and standard deviations (in parentheses) are shown; however, standard deviations for percentage terms are not computed. Detailing and samples are defined as cumulative discounted sums up to the time of the writing of the prescription, as described in the "Methodology" section.

3. Medicare: Medicare, Medicaid, or Workers' Compensation (42%).

Most of the patients in the second category are covered by an HMO plan (more than 75%); most of the patients in the third category carry Medicare insurance (more than 90%). Although the data set provides a code for no insurance, our sample happens to contain no such patients.

Methodology

Model

To estimate the effects of price, type of insurance, and direct selling efforts on prescription choice, we use a multinomial logit model (McFadden 1974). However, prescription behavior patterns might be strongly influenced by factors other than the explanatory variables we include in our model. Examples are physicians' unobservable personal characteristics (e.g., inertia, loyalty to certain drugs), unobserved factors related to patients (e.g., the severity of their condition, their health history, other drugs they are currently taking that may cause interactions or exacerbate side effects), or even unobserved specifics unique to the interaction between the physician and the patient (e.g., some patients may like to get more involved in the drug choice because of experience, knowledge, word of mouth, or DTC advertising effects, whereas others leave the choice completely to the physician). Because of data limitations, little can be done to control for these unobserved factors. However, ignoring these factors might bias the coefficients of the included explanatory variables. This is known as aggregation bias (Chamberlain 1980).

We opt for a latent class model that allows for a semiparametric distribution of heterogeneity that is more flexible than any prespecified distribution (Kamakura and Russell 1989). We specify a multinomial logit model with an unknown number of latent classes and interactions and quadratic terms to capture better the specifics of prescription choice and the relationships among model parameters. We define the indirect utility as follows:

$$
\begin{aligned}
(1)\quad U_{itjk} = {} & \alpha_{jk} + \gamma_{HMOj}HMO_{it} + \gamma_{MEDICAREj}Medicare_{it} \\
& + \beta_{Pk}Price_{tj} + \beta_{P-HMO}(Price_{tj} \times HMO_{it}) \\
& + \beta_{P-MEDICARE}(Price_{tj} \times Medicare_{it}) \\
& + Cum.Detailing_{itj} \times (\beta_{D} + \beta_{D-Sq}Cum.Detailing_{itj} \\
& + \beta_{DP}Price_{tj} + \beta_{D-HMO}HMO_{it} + \beta_{D-MEDICARE}Medicare_{it}) \\
& + Cum.Samples_{itj} \times (\beta_{S} + \beta_{S-Sq}Cum.Samples_{itj} + \beta_{SP}Price_{tj} \\
& + \beta_{S-HMO}HMO_{it} + \beta_{S-MEDICARE}Medicare_{it}),
\end{aligned}
$$

where j denotes the brand; i denotes the physician; t stands for the prescription incidence; and k = 1, 2,…, K, where K is the number of latent classes to be estimated by the model. We let the intercepts and the price coefficient be segment specific, as noted by their k subscripts. Allowing all coefficients to be segment specific is possible in theory, but our data are not long enough per physician to enable us to estimate reliably the heterogeneity distribution on all coefficients. For identification purposes, one of the three types of insurance coverage should be specified as the default. We chose the default type of insurance plan to be private insurance. Furthermore, we arbitrarily let Brand 7 be the reference brand and set its drug-specific coefficients (α_7, $\gamma_{HMO,7}$, $\gamma_{Medicare,7}$) equal to zero, again for identification reasons. The drug-specific intercepts must be different for each brand, because they will reveal brand-specific characteristics. The insurance coefficients should also be different, because unlike price, detailing, and samples, the type of insurance itself does not vary by the prescription incidence. The parameters for variables that contain price, detailing, and samples do not need to vary across products, because the variables themselves are product specific. Note that including quadratic terms for Detailing and Samples in our model does not necessarily impose a curvature but will help uncover diminishing marginal effects or an inverted-U shape of the relationship.[6]

Cumulative Discounted Sums of Detailing and Samples

For each prescription physicians write, they are likely to be influenced by past personal selling efforts. We discount the cumulative personal selling effort consistently with the methods used in the advertising literature. The major premise of these methods is that physicians are influenced by the recent visits of sales representatives more than by the distant ones. The discounted formulation for detailing has been used in another context by Berndt and colleagues (1994). Discounting enables us to include effects such as memory decay and the fading impact of past detailing and samples with time.

$$(2)\qquad (\text{Cumulative Detailing})_{itj} = \sum_{\tau=0}^{t} \delta^{(t-\tau)}\text{Detailing}_{i\tau j}$$

$$(\text{Cumulative Samples})_{itj} = \sum_{\tau=0}^{t} \delta^{(t-\tau)}\text{Samples}_{i\tau j},$$

where the (monthly) discount factor δ is set at a fixed value to yield a reasonable annual discount rate.[7] We compute the discounted sum of detailing minutes and the number of received samples for all products by the time of prescription. Henceforth, for brevity we use the terms Detailing and Samples to refer to the cumulative discounted sums.

Results and Discussion

Model Goodness of Fit

In addition to the multinomial logit model with latent classes specified previously, we estimate several models that are nested within the full model (such as models with no heterogeneity and no interaction or quadratic terms). We find that the full latent class model attains a higher likelihood value than the nested models with fewer parameters. The Akaike information criterion (AIC) and Bayesian information criterion (BIC) also indicate a better fit for the full latent class model than for the nested ones.[8]

We experiment with two different values of the discount factor ($\delta = .99$ and $\delta = .80$) in the cumulative discounted sums of detailing and samples as specified in Equation 2. We find that the former provides for a better fit as indicated by the AIC and BIC. The results are directionally the same, showing the robustness of our model to the discount factor in that range. Henceforth, we use the results from the better fitting model to guide our discussion. The model has excellent fit between predicted and actual market shares for each data period. The actual market shares for each product are within the prediction confidence limits except for a few cases of extreme highs or lows. (The figures are available on request.) The estimated optimal number of segments is three, as indicated by the AIC and BIC. The estimation results of this model are summarized in Table 3.

Estimates

Intercepts. Of the 18 brand- and segment-specific intercepts, 11 are statistically significant. Brand preferences appear to be polarized when we account for heterogeneity; in other words, each of the three segments is dominated by a different brand. In the first segment of physicians, Brand 2 appears to be dominant, and Brand 6 is least favored judging by the magnitudes of the intercepts (see the first column of Table 3). Brands 1, 3, and 5 are also preferred, but not as strongly as Brand 2. In the second segment, Brand 5 is the most preferred brand, followed by Brand 1. Physicians in this segment appear indifferent to the rest of the products. Dominant in the third segment is Brand 4, but this segment does not favor Brands 1, 3, and 5. Thus, accounting for unobserved heterogeneity in brand preferences reveals that physicians can be split into segments that are characterized by relatively pronounced preferences for certain brands.

The finding that different brands are preferred by different segments of physicians leads us to infer that physicians tend to favor certain brands differently in the absence of external factors such as price and promotion. Accounting for unobserved preferences reduces the estimation biases for the coefficients of the included explanatory variables. It is tantamount to explaining the inherent heterogeneity away. We do not know which physicians belong to these segments, but we have reduced the bias in the coefficients of the remaining explanatory variables by controlling for latent classes. If, in contrast, we had found that the intercepts (i.e., intrinsic brand preferences) were similar across segments, we would have expected more heterogeneity in the impact of price and the promotional variables, which would have rendered our focal results more tentative.

Insurance coefficients. We find that the HMO and Medicare coefficients are significant for most brands, indi-

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[6] An alternative would have been to use logarithmic transformations of Detailing and Samples—log(Detailing) and log(Samples)—which would have imposed concavity outright. However, we prefer to use a model with linear and quadratic terms because it is more flexible and does not introduce unnecessary concavity.

[7] The discount factor = 1/(1 + the discount rate).

[8] The AIC and BIC reduce the likelihood fit by adjusting for the number of parameters and/or the number of observations. AIC = –2 × log-likelihood + 2 × (number of parameters); BIC = –2 × log-likelihood + (number of parameters) × log(number of observations). They are lower for a better fitting model, which is the case with the full latent class model. The detailed results of the nested models are not shown for space considerations but are available on request.

TABLE 3
Physicians' Prescription Choice Model with Latent Classes: Maximum Likelihood Estimates

Covariate	Estimate (Standard Error)		
Intercept ($\alpha_{11}, \alpha_{12}, \alpha_{13}$)	2.3817*** (.4032)	.9240*** (.3625)	−.9411*** (.3220)
Intercept ($\alpha_{21}, \alpha_{22}, \alpha_{23}$)	3.3434*** (.4533)	−.5040 (.4803)	.2105 (.4017)
Intercept ($\alpha_{31}, \alpha_{32}, \alpha_{33}$)	2.2308*** (.5873)	.3002 (.6331)	−1.4519*** (.6080)
Intercept ($\alpha_{41}, \alpha_{42}, \alpha_{43}$)	−.2435 (.5336)	.3684 (.3758)	.9627*** (.2827)
Intercept ($\alpha_{51}, \alpha_{52}, \alpha_{53}$)	1.5582*** (.4259)	1.3693*** (.3610)	−1.1301*** (.3644)
Intercept ($\alpha_{61}, \alpha_{62}, \alpha_{63}$)	−2.8955** (1.5169)	−.1747 (.4464)	.0656 (.3152)
HMO ($\gamma_{HMO,1}$)		.6436* (.4332)	
HMO ($\gamma_{HMO,2}$)		−1.1946* (.7450)	
HMO ($\gamma_{HMO,3}$)		−1.5789* (1.2610)	
HMO ($\gamma_{HMO,4}$)		−.6110* (.4969)	
HMO ($\gamma_{HMO,5}$)		−.8400** (.5016)	
HMO ($\gamma_{HMO,6}$)		−.8018 (.7323)	
Medicare ($\gamma_{Medicare,1}$)		.8116*** (.3584)	
Medicare ($\gamma_{Medicare,2}$)		1.1549*** (.4419)	
Medicare ($\gamma_{Medicare,3}$)		2.1348*** (.6077)	
Medicare ($\gamma_{Medicare,4}$)		1.0108*** (.3515)	
Medicare ($\gamma_{Medicare,5}$)		.4108 (.3745)	
Medicare ($\gamma_{Medicare,6}$)		.1045 (.3960)	
Price ($\beta_{P1}, \beta_{P2}, \beta_{P3}$)	−.0085 (.0228)	.0568** (.0254)	.0891*** (.0252)
Price × HMO		.0731* (.0590)	
Price × Medicare		−.0224 (.0234)	
Detailing		.1085*** (.0204)	

TABLE 3
Continued

Covariate		Estimate (Standard Error)	
Detailing^2		–.0007*** (.0001)	
Detailing × HMO		–.0091 (.0198)	
Detailing × Medicare		–.0147** (.0084)	
Detailing × Price		–.0012*** (.0004)	
Samples		.0345*** (.0089)	
Samples^2		–.0001* (.00003)	
Samples × HMO		–.0145*** (.0062)	
Samples × Medicare		–.0141*** (.0040)	
Samples × Price		–.0002* (.0002)	
Portion of latent classes (1 2 3)	42%	31%	26%
Log-likelihood		–2533.44	
AIC		5160.88	
BIC		5418.77	

*p < . 01.
**p < .05.
***p < .01.

cating that the type of insurance coverage has a substantial direct impact on the prescription probability of that drug. We point out that all coefficients are relative to that of Brand 7, which was chosen as the reference brand for model identification purposes. The negative coefficients should be interpreted as indicating that the five brands are on fewer formulary lists than the reference brand and Brand 1. Note that we do not have data on formulary lists, which also change over time, so our attempts to interpret the results from the perspective of their inclusion in HMO formularies are speculations.

All six Medicare constants are positive relative to that of Brand 7, and four of them are highly significant. That the signs of the coefficients can be interpreted only relative to Brand 7 indicates that Brand 7 is the least preferred brand for Medicare patients. If we were to expound on the reasons Brand 7 is so unpopular for Medicare patients, given that it has a comparatively reasonable price and is not the least preferred brand overall (see Table 2), a possible explanation would be the presence of side effects that are more common or adverse in the case of elderly patients. However, this is just a speculation, because we lack relevant information.

Price effects. The results of the latent class model unambiguously show that when physicians' distinguishing prescription patterns are accounted for in the basis for segmentation, two of the three segments have positive price coefficients, which thus provides an answer to Empirical Question 1. The two segments together constitute approximately 57% of prescription incidences (segment proportions are shown in the last row of Table 3: Prob[Segment 2] = .31 and Prob[Segment 3] = .26). The relationship between price and prescription probability for the first segment remains weakly negative: The price coefficient is negative but insignificant at $p > .10$.

The results can be interpreted from various aspects. A possible explanation of the preceding findings is that physicians are often driven by the gravity of a patient's condition and the possible interactions between the drug and other types of medication taken by the patient, which would understandably become a major consideration in the choice of a drug and would override the less critical price concerns. For example, if price is perceived as correlated to drug efficacy and the absence of side effects and contraindications, the incidence of prescribing more powerful drugs will produce positive price coefficients. This is the well-known "price as a signal of quality" argument. Also, prescriptions for refills tend to repeat the initially prescribed drug, so the prescription pattern per patient will persist across the patient's visits, making price a less important factor. As we mention previously, physicians keep prescribing the same drug for refills if the drug has been working for the patient, so that possible placebo effects of the original brand remain undisrupted. The positive price coefficients for two of the three segments could also be a result of some selection process by which patients with more serious conditions would be referred to a specialist who would prescribe a more expensive but more efficacious drug because of the severity of the patient's condition. Unfortunately, we cannot provide support for this explanation because, as already mentioned, our data do not contain the necessary information. However, this issue warrants further examination with the right kind of data.

H_1 suggests that the price effect is more negative for elderly patients on Medicare than for patients with private or HMO insurance. In our model, the impact of price for private insurance patients is given by the price coefficient alone, with no interactions, because private insurance is the reference category among the insurance dummy variables. Therefore, we find initial directional support for our hypothesis, because the Price × Medicare interaction coefficient is negative but insignificant (Table 3).

The positive interaction effect between price and HMO insurance indicates that the effect of reduced price sensitivity is further enhanced if the patient has HMO insurance. Note that this result is relative to the reference category of private insurance and suggests that physicians appear less price sensitive for HMO patients than for private insurance patients. Although we find this result surprising given that the possession of private insurance might indicate a patient's preference for quality care over cost (which ideally would have produced the lowest prescription drug price sensitivity for patients with private insurance), we believe this finding should be interpreted in the context of three factors: (1) Physicians are restricted by the HMO formularies, and price becomes far less of an issue to physicians if the drug is endorsed by the patient's HMO formulary; (2) HMO patients usually pay nothing or just a small fraction of the drug cost; and (3) there is great variability in private insurance plans' extent of drug coverage. Consequently, price becomes a factor of little concern to physicians and patients in the case of HMO coverage, even when compared with private insurance.

Furthermore, we find that there is a significant, negative interaction effect between price and detailing, indicating that the informative aspect of detailing as a type of advertising overrides the sales pitch persuasiveness. The same kind of negative interaction is also found between price and samples, providing an answer to Empirical Question 2. Thus, we find that personal selling of prescription drugs to physicians as a specific type of brand-level advertising increases price sensitivity, consistent with prior research (Mitra and Lynch 1995).

Personal selling effects. The coefficients of detailing and samples are both positive and significant, providing support for H_2 and indicating that the main effects of personal selling are as conjectured, which increases the prescription probability of a drug, ceteris paribus. However, consistent with H_3, we find that excessive detailing or samples are counterproductive: Their quadratic effects are negative and significant, which implies that these promotional activities have an inverted-U shape. This shape implies that too little or too much cumulative personal selling is suboptimal and that any repetitive detailing or free sample activity must be done with caution. The implied adverse effects of excessive detailing and samples can be attributed to frustration caused by waste of time, fatigue with the promotion, or perception that the drug manufacturer is too desperate or too aggressive.

Thus, our model is flexible in offering a variety of alternatives to pharmaceutical companies to help determine how long and how often they should schedule visits to physicians and at what level free samples start lowering the prescription probability of a drug. Pharmaceutical companies could adopt our model and run it through their own databases to arrive at optimal scenarios specific to their products and markets. The sensitivity analysis of the optimal levels of detailing and free samples produces values that exceed those of the currently established practices, as indicated in our data. This empirical result suggests that pharmaceutical companies are operating on the increasing part of the curve and their direct selling efforts are below the level of activity that is most effective. On the basis of our analysis, we conclude that there is room for enhancing the effectiveness of personal promotional efforts by drug manufacturers.

Public policy effects. We turn to public policy issues next and explore the interactions between pharmaceutical promotion variables and health insurance coverage. The estimation results indicate that detailing and samples are less likely to influence physicians who see a higher percentage of HMO or Medicare patients, providing full support for H_4. All four interaction effects mentioned in H_4 are negative, and three of them are significant.

Therefore, we conclude that both Medicare and HMO coverage, compared with private insurance, detract from the main positive effect of detailing and samples on the drug prescription probability. These results can be explained by physicians' likelihood of prescribing from fixed formularies suggested by the HMO, which makes them relatively insulated from personal selling efforts. In the case of Medicare, in which physicians have more flexibility in selecting a drug, the revealed diminished effectiveness of personal selling can be attributed to the majority of patients being elderly people who are likely to suffer from other ailments, so considerations related to the patient's condition, other medications taken by the patient, or even cost would prevail. The finding that detailing and free samples to physicians whose patients are largely covered by Medicare or HMOs are not as effective as they are to physicians whose patients are largely covered by private insurance may be an indication of wasted resources and therefore warrants further research.

Implications for Managers and Policymakers

The results of this study point to conclusions with practical managerial and public policy value. We find evidence that physicians exhibit dissimilar brand preferences in the absence of external factors such as price and promotion.

However, we cannot determine whether these distinctive preferences are related to the propensity of physicians to favor a certain set of features in drugs (e.g., ingredients, lack of side effects) or to the particular characteristics of their pool of patients. Drug manufacturers that have the expertise and knowledge to compare the chemical composition and efficacy of alternative drugs would be in a much better position to conduct their own segmentation studies and decide whether it is the drugs or the patients that predetermine the existing preference segmentation of physicians and to adjust their targeting and promotional efforts accordingly.

Our findings indicate that the majority of physicians either demonstrate a lack of price sensitivity or are characterized by fairly limited price sensitivity. Consequently, we suggest that in general, detailing focused on the low price of a drug as its main differentiating feature will not be very effective. However, the increased price sensitivity in the case of Medicare patients suggests that when detailing to physicians with a large number of such patients, sales representatives should point out the lower price of the drug compared with alternatives. In the case of physicians who see mostly patients with HMO and Medicare insurance, we infer that detailing and free samples are not very effective. Therefore, we recommend that the pharmaceutical companies review their personal selling strategies for such physicians, because they could be wasting their promotional resources. In contrast, personal selling to physicians who see mostly patients with private insurance is effective, and drug manufacturers should start targeting these physicians in a more systematic way.

Our study reveals that the scope of personal selling should be carefully scheduled in terms of frequency, length of sessions, and number of free samples given away, so that the company can optimize the effectiveness of its direct promotional efforts and expense. The finding that exposing a physician to personal selling can become counterproductive beyond a certain amount of cumulative detailing minutes and samples is an important insight and should be taken into account. In this regard, we recommend that managers set a system for scheduling visits to physicians and specify the focus of the message (contingent on the prevalent type of insurance held by physicians' patients), the duration of detailing sessions, and the number of free samples to be dispensed per session to ensure optimal effects of personal selling. The exact optimal levels can be computed from the formulas in our model.

Considering other types of marketing activities pharmaceutical companies engage in—for example, DTC advertising—one implication of our research is that setting a schedule for personal selling to physicians and synchronizing it with the timing of DTC campaigns might develop promotional synergy and lead to enhanced effectiveness (for limited empirical evidence on the synergy between pharmaceutical detailing and DTC advertising of prescription drugs, see Gönül, Carter, and Wind 2000). Furthermore, such planning would establish economies of scope for the drug manufacturer by capitalizing on interactions between patients and physicians through a concerted marketing effort targeted at them simultaneously through different promotional channels.

In addition, our analysis sheds light on issues of interest to public policymakers. First and foremost, it helps disperse the concerns that personal selling is ethically objectionable because it might inordinately affect physicians. We find no evidence of such influence, and our findings suggest that detailing and free samples are mostly informative and increase price sensitivity. Another controversial aspect of personal selling to physicians is its cost compared with its social value. We find that the effectiveness of personal selling follows an inverted-U pattern, so that there are optimal values of both detailing minutes and free drug samples. Exceeding those values has dissipative economic impact on the company and potentially on society. Therefore, we find some reasons for concern related to potential waste of resources if this type of marketing activity is not administered systematically or monitored more stringently by the pharmaceutical companies.

Second, because HMO formularies impose restrictions on the drugs to be prescribed by physicians, personal selling to physicians with mostly HMO patients is wasteful. The social value of personal selling to physicians with Medicare patients can be viewed as positive, because it increases physicians' price sensitivity and thus leads to optimized utility on behalf of the patient. In general, we find no reasons to believe that direct selling—as one of the strategies of health care communications—has negative social consequences. However, there is room for pharmaceutical companies to customize their personal selling efforts and optimize the allocation of direct promotional resources, as suggested previously. We acknowledge that because our results are based on a single product category (drugs for a specific therapeutic condition), a cross-category analysis will substantially strengthen or challenge the findings reported in our article.

In our model, we control for unobserved heterogeneity in brand-specific constants and price effects by introducing a segment structure on the sample of physicians. We realize that other coefficients can be made heterogeneous as well. However, to justify a full heterogeneity specification, significantly larger numbers of observations per physician may be necessary to yield stable estimates. The additional data points may also help us resolve the impact of pricing on prescription choice more satisfactorily. For two segments, physicians appear to use price as a signal of quality. Further analysis on larger data sets may be necessary to validate these findings. Also, the reader should bear in mind that price changes over the estimation period are quite limited.

Accurate and comprehensive data sets are scarce in pharmaceutical marketing research. Although our data set is sufficient for the purposes of this study, it still lacks some important data. For example, medical information on patients' condition and treatment history are potentially important covariates. However, we do not know of a data set that includes competitive price and promotion information about manufacturers as well as patient-specific information. This is a subject for further research, given data availability. An interesting area for further research is the pressure that DTC advertising of prescription drugs exerts on the physician's choice of a prescription drug (Gönül, Carter, and Wind 2000). The synergy and potential conflict between DTC advertising and traditional detailing to physicians could also be investigated. Richer data sets that include patient-level advertising exposure and physician-level marketing exposure are needed to untangle these issues in depth.

Conclusion

The significance of public policy issues in the pharmaceutical industry cannot be overstated. The interests of managed care institutions and pharmaceutical companies alike give priority to prescription drug treatments over costly inpatient care. In addition, physicians are limited in their choice of prescription drugs through formulary agreements that lower cost. We find that allowing for segments of physicians is insightful because it reveals intrinsic brand preferences of physicians and reduces the estimation bias. We find evidence that in general, physicians' price sensitivity comes second to considerations about drug efficacy and patients' conditions. We investigate the role and impact of personal selling (detailing and samples) on the choice of prescription drugs. If such a promotional activity primarily provides beneficial information to physicians, it will be regarded as useful. However, if detailing inordinately influences prescription patterns, the expenditure and role of detailing and sampling activities should be reviewed by public policy advocates. We find evidence that detailing positively affects the prescription probability of a drug up to a point, after which excessive detailing becomes countereffective. The effectiveness of dispensing free samples to physicians follows the same pattern.

We find evidence of the informative value of personal selling, which makes physicians aware of new drug alternatives and their specifics and prices. To that extent, we conclude that the impact of detailing and samples is limited and mostly informative. Therefore, the concern that these activities may excessively influence physicians' prescriptions remains unfounded within the context of our analysis. Last but not least, we find that pharmaceutical manufacturers may be wasting resources when sending sales representatives to physicians whose patients carry mostly Medicare or HMO coverage, because detailing and free samples are not as effective for such physicians.

In summary, we conclude that there are no reasons for public concern regarding the social implications of the reviewed personal selling practice employed by drug manufacturers, because its effect is mostly informative. Moreover, we find that there is room for enhancing the effectiveness of direct promotional efforts to physicians by more specific segmentation, targeting, and positioning contingent on the intrinsic brand preferences demonstrated by certain health care professionals and the prevalent type of insurance held by their patients. In addition, the amount and scheduling of detailing and free samples can be optimized for maximizing the return on this type of promotion. Last, we suggest that finding ways to synchronize personal selling to physicians with DTC advertising may achieve further synergies, but the social benefits of such public drug advertising and its possible ramifications should be explored in depth.

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Communicating the Consequences of Early Detection: The Role of Evidence and Framing

Despite the enormous benefits of early-detection products, consumers are reluctant to use them. The authors explore this reluctance, testing alternative approaches to communicating the consequences of detection behaviors. The results suggest that anecdotal messages are more involving than statistical messages and that positive anecdotes (about gains from screening) are less persuasive than negative anecdotes (about the losses from failing to get screened); positive anecdotes appear to cause a "boomerang" effect. The authors discuss implications for promoting consumer risk-reduction behaviors.

In recent years, there has been a proliferation of new products that enable the early detection of disease, including new scanning devices for detecting osteoporosis, genetic tests for inherited breast cancer risk, and home testing kits for HIV and colon cancer (see, e.g., Ameghino 1998; Farhan 1996; Gavaghan 1998). Such products not only represent potential revenue streams for the firms that develop them but also provide a potential means for achieving two important but often incompatible societal goals: improving public health and simultaneously reducing health care costs (see, e.g., Elder et al. 1994; Reagan 1992). Many of the major killers in an industrialized society (e.g., high blood pressure, diabetes, cancer) are insidious diseases, doing much of their damage before the patient experiences symptoms. If such diseases can be detected early in their development, they can be treated much more effectively, saving both lives and money.

However, the success of early detection programs requires more than new technology. It also requires widespread consumer adoption of screening products, and gaining consumer adoption of these products is a major marketing challenge. Despite the many benefits of screening, consumers are often reluctant to participate in it (see, e.g., Andreasen 1995; Elder et al. 1994).

One source of this reluctance appears to be a general consumer ambivalence toward problem-detection products, ranging from home radon detection services (Weinstein and Lyon 1999) to drug testing kits marketed to worried parents (Snyder 1996). Consumers who do not believe that they are susceptible to a given problem may question the benefit of being tested for something they "know" they do not have. In contrast, consumers who are concerned about having an underlying problem may have anxiety about the test's outcome, making them reluctant to find out whether their fears are justified (see McCaul et al. 1996). Although the long-term benefits of early problem detection are often great, the short-term outcome may be bad news. And many people are ambivalent about seeking out bad news. While proverbial wisdom advises that "Forewarned is forearmed" and "Knowledge is power," it also advises that "Where ignorance is bliss, 'tis folly to be wise" and "So long as I know it not, it hurteth me not" (Simpson 1982).

Consumers' ambivalence about screening outcomes raises an important question for advocates of problem-detection products: In designing messages to persuade consumers to adopt such products, how should potential testing outcomes be portrayed? In this study, we examine how consumers' beliefs and attitudes toward screening are affected by two specific message-design factors: (1) whether screening consequences are communicated with anecdotal evidence or statistical evidence and (2) whether these consequences are framed in terms of potential losses or potential gains. Each of these two factors is discussed subsequently.

Conceptual Background

The Effects of Anecdotal Versus Statistical Evidence

When communicating the potential consequences of a behavior, promoters can employ either a specific illustrative anecdote or more general population statistics. For example, in communicating the benefits of wearing a seat belt, promoters could either tell the story of a specific person whose life was saved by wearing a seat belt or cite statistics on the lower accident fatality rates among passengers wearing seat belts. From an objective standpoint, statistics are generally more informative than anecdotes (because an isolated anecdote can be found to support almost any point of view). However, research suggests that audiences tend to be more interested in and influenced by anecdotal than statistical evidence

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(see e.g., Brosius and Bathelt 1994; Hogarth 1980; Taylor and Thompson 1982). In interpreting these findings, Hogarth (1980, p. 98) posits that "specific case data are ... encoded and remembered on several dimensions with a correspondingly rich set of meaningful associations" (see also Shedler and Manis 1986). In contrast, many subjects seem to "tune out" abstract generalizations, especially statistical generalizations. Brosius and Bathelt (1994, p. 50) note the "difficulties people have in processing ... percentages, probability, and so forth," and Taylor and Thompson (1982, p. 162) note subjects' tendency to "underuse ... statistical information."

Although anecdotal messages may be more involving than statistical messages, this does not necessarily mean that they are more persuasive. Petty and Cacioppo (1981) argue that involving messages can be either more or less persuasive than noninvolving messages, depending on the perceived strength of the arguments contained in these messages (see also Eagly and Chaiken 1993).

Framing the Consequences of Consumer Health Decisions

In promotions for any course of action, either the potential gains from pursuing it or the potential losses from not pursuing it can be emphasized. For example, an advertisement could emphasize either the money gained by mailing in a rebate or the money lost by not mailing it in. In a series of experiments involving hypothetical choice situations, Tversky and Kahneman (1981) find that people are more likely to pursue an action when it is framed as a means to avoid a loss rather than to achieve a gain. According to Tversky and Kahneman's "prospect theory," decision makers are motivated by both losses and gains but tend to give greater decision weight to potential losses (see also Kanouse 1984). This is especially true when the consequences of an action are delayed. Behavioral economists have found that the decision weight given to a consequence is "discounted as a function of the delay of its delivery" (Madden 2000, p. 16) and that future gains tend to be discounted more than future losses (see, e.g., Simpson and Vuchinich 2000).

Tversky and Kahneman's (1981) experiments show the effects of framing on hypothetical choices, typically between monetary bets or public policy options. However, Meyerowitz and Chaiken (1987) extend this research to the study of consumers' personal health behavior, specifically breast self-examination (BSE) behavior among female college students. Consistent with Tversky and Kahneman's hypothesis, these researchers find that subjects are more motivated to participate in BSE when messages stress the potential losses from not performing BSE rather than the potential gains from performing BSE.

However, when subsequent researchers have examined the effects of gain versus loss framing in the context of real consumer health decisions, the results have been mixed. Some studies have found loss framing more persuasive (e.g., Banks et al. 1995; Meyerowitz and Chaiken 1987), some have found gain framing more persuasive (e.g., Rothman et al. 1993), and still others have found no framing effects at all (e.g., Lauver and Rubin 1990). These mixed findings have prompted researchers to search for potential moderators of framing effects.

Message Involvement as a Moderator of Framing

Maheswaran and Meyers-Levy (1990, p. 361) suggest that framing effects are moderated by subjects' involvement with the framed message. Specifically, they posit that "negatively framed messages should be more persuasive than positively framed ones when issue involvement is high." To derive this hypothesis, the authors integrate Tversky and Kahneman's prospect theory with the cognitive response theory of persuasion (e.g., Petty and Cacioppo 1981): Prospect theory implies that loss-framed arguments will be perceived as stronger or more compelling than gain-framed messages. However, cognitive response theory posits that for subjects to be influenced by argument strength, they must first be sufficiently involved with message content to evaluate argument strength. Consistent with this hypothesis, Wright and Weitz (1977) find that women show a greater aversion to negative features of birth control devices when purchase is imminent (which increases motivation to process the information) than when purchase will take place in the distant future. In interpreting these and other findings, Wright (1981, pp. 279) argues that "overweighting [of negative information] may only occur when an audience member is sufficiently concerned over message content to bother generating reactions and integrating those into an overall impression, and to worry about making errors in this."

To test their involvement hypothesis, Maheswaran and Meyers-Levy (1990) conducted a 2 × 2 experiment in which college students were given information on cholesterol screening. Involvement was manipulated by telling subjects either (1) that heart disease can affect people 20 to 29 years of age (high involvement) or (2) that heart disease affects only the elderly (low involvement). Next, subjects were given cholesterol-screening messages, which were either gain framed (stressing the health benefits of screening) or loss framed (stressing the health risks of not being screened). As hypothesized, loss frames were more persuasive among high-involvement subjects. Maheswaran and Meyers-Levy (1990, p. 366) concluded "that negatively framed appeals can be highly persuasive ... only if individuals who receive the appeal are sufficiently involved with the issue." In addition, the experiment indicated that among low-involvement subjects, gain framing was more persuasive than loss framing. In interpreting this finding, the authors posited that, though subjects who scrutinize gain-framed messages judge them to be weak arguments, less involved subjects simply view them as positive peripheral cues, which enhances persuasion among these subjects (see Petty, Cacioppo, and Schumann 1983).

Subsequent experiments have replicated the finding that loss-framed messages are more persuasive among message-involved subjects, though they have tended to find no effect of framing under low-involvement conditions. Rothman and colleagues (1993) examine how the effectiveness of alternatively framed messages to promote skin cancer screening is moderated by involvement. However, instead of manipulating involvement, the authors use subjects' sex as a surrogate for involvement. Citing evidence that "women as compared to men were more concerned about sun tanning and skin cancer and, therefore, were considered more involved with the health issue," they conclude that sex "was a reasonable proxy for degree of issue involvement" (Rothman et al. 1993, p. 421). As predicted, loss-framed messages were more effective among women, whereas framing had little effect on men. Rothman and colleagues (1993, p. 420) conclude that "exposure to negatively framed information led women to be even more likely … to intend to obtain a skin exam."

Finally, Block and Keller (1995) examined the framing–involvement interaction, manipulating involvement by altering the perceived effectiveness of the target behavior. Gleicher and Petty (1992) found that when subjects were assured that a protective behavior was effective, they were less likely to scrutinize the subsequent arguments that support this behavior (perhaps fearing that such scrutiny would weaken their confidence in the protective behavior) than when they were told that the behavior's effectiveness was doubtful. On the basis of this research, Block and Keller (1995) hypothesized that messages advocating low-efficacy health behaviors would elicit greater message involvement than messages advocating high-efficacy behaviors, and therefore loss-framed messages would be more persuasive for low-efficacy behaviors. They tested these hypotheses in two experiments, the first involving a sexually transmitted disease and the second involving skin cancer. In both experiments, subjects in the low-efficacy conditions exhibited greater message involvement/processing, and among such subjects loss framing induced more favorable attitudes and intentions than did gain framing. However, among subjects exposed to the less involving (high-efficacy) message, framing had no effect. On the basis of these experimental results, Block and Keller (1995, p. 192) concluded that "when subjects process [messages] in-depth, negative frames are more persuasive than positive ones."

Behavior Type as a Moderator of Framing

In a recent review article on framing effects and consumer health behavior, Rothman and Salovey (1997) acknowledge that message involvement might play a role in moderating such effects. However, they suggest that an additional moderator might be at least as important as involvement: the type of health behavior being promoted. Rothman and Salovey note that in studies involving prevention behaviors (such as using sunscreen or infant car seats), gain-framed advocacies were often more persuasive than loss-framed behaviors. However, in studies involving disease-detection behaviors (such as screening for cancer or heart disease), loss framing is typically more persuasive.[1]

In interpreting this difference, Rothman and Salovey (1997) argue the following:

1. The relative effectiveness of gain and loss frames depends on how well each frame matches subjects' prior perceptions about the target behavior; in other words, "we must consider how framed information is integrated into prior perceptions" (p. 9).
2. Consumers tend to view detection behaviors in a negative light and thus are less receptive to messages that stress the benefits of these behaviors than to messages that stress the even greater risks/costs of failing to engage in these behaviors. Rothman and Salovey argue persuasively that consumers tend to perceive disease-screening behaviors as inherently unpleasant; some of the unpleasantness is fairly certain (e.g., cost, discomfort, embarrassment, inconvenience), whereas other aspects are less certain (e.g., the possibility of bad news about the patient's health).
3. Therefore, the best way to position screening is as the lesser of two evils—that is, to point out the even greater unpleasantness that can result from not screening and hope that in this context, consumers will view getting screened as the "least bad" option. This is what a loss-framed message does. A gain-framed message, in contrast, tries to motivate screening by stressing its benefits. According to Rothman and Salovey, this positioning runs counter to consumers' predominantly negative attitudes toward disease-detection behaviors. Therefore, a gain-framed screening advocacy is likely not to be persuasive.

The Potential for Boomerang Effects

Thus, Rothman and Salovey (1997) conclude that among message-involved subjects, gain-framed messages will be less persuasive than loss-framed messages. However, they do not pursue another implication of their reasoning, which has not been investigated in any previous study either: If gain-framed messages conflict with consumer perceptions of disease-detection behaviors, perhaps such messages are not only unpersuasive but counterpersuasive—that is, perhaps gain-framed messages create a boomerang effect, shifting consumer attitudes in the opposite direction from that intended by the advocacy. Similar to Rothman and Salovey (1997), Petty and Cacioppo (1981, p. 225) observe that when audiences "relate information in the message [to] pre-existing knowledge about the topic, ... they may either agree or disagree with the message." However, Petty and Cacioppo (1981, p. 225) go on to note that subjects' "antagonistic ... responses may be so much more persuasive than the arguments contained in the message that a position opposite to that advocated might be adopted."

Such boomerang effects have been discovered in a variety of persuasive contexts, including exposure to messages that are highly discrepant from subjects' prior attitudes (Dignan et al. 1985; Whittaker 1968), reactance against perceived strong persuasive intent (Snyder and Wicklund 1976), statements of facts already presumed to be true (Gruenfeld and Wyer 1992), and presentation of extremely counterstereotypical examples (Kunda and Oleson 1997). In addition, Sutton, Balch, and Lefebvre (1995) have speculated that efforts to educate consumers about cancer risk factors can sometimes decrease consumers' motivation to undergo cancer screening. However, no previous study has examined the potential role of a boomerang in message framing effects.

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[1] These two categories of health behavior are defined as follows. *Prevention* (sometimes called "primary prevention") behaviors reduce the probability that a person will contract a disease. For example, in the context of HIV infection, the practice of "safe sex" (e.g., through the use of condoms) would be considered preventive behavior, because it reduces the probability that a person will become infected with HIV. In contrast, *detection* (sometimes called "secondary prevention") behaviors do not affect the chance of contracting a disease but simply enable a person to learn whether he or she has already contracted it. For example, getting a blood test for the presence of HIV would be considered a detection behavior, being tested for HIV does not reduce the probability of getting the infection, but it may allow for earlier and more effective treatment.

The present study is explicitly designed to search for boomerang effects. In addition to the treatment groups exposed to framed messages, the experiment includes a control group that was not exposed to any message. This enables us to determine whether gain-framed messages are merely less persuasive than loss-framed messages or whether gain-framed messages produce more negative attitudes toward the advocated behavior. As noted previously, several studies have found that involved subjects who are exposed to a loss-framed message have more positive attitudes toward the target behavior than involved subjects who are exposed to a gain-framed message, and researchers have attributed this difference to a proadvocacy attitude change created by the loss-framed message. Of the framing experiments discussed previously, only Meyerowitz and Chaiken's (1987) included a control group. These authors did not evaluate the possibility of a boomerang effect for gain-framed messages. However, an examination of their cell means reveals that compared with control subjects who saw no framed message, subjects exposed to a gain-framed message had more negative responses to the target behavior on three of the five dependent measures. Meyerowitz and Chaiken do not provide sufficient information to test for the statistical significance of these differences (and because n = 79, the power of such tests would be low). Nonetheless, their findings suggest the possibility of a boomerang effect for gain-framed messages.

Hypotheses

On the basis of the preceding discussion, we hypothesize the following consumer responses to messages advocating screening behaviors:

H_1: Among subjects exposed to (low-involvement) statistical messages, framing will have little effect on attitudes and beliefs toward the target behavior.

H_2 Among subjects exposed to the (high-involvement) anecdotal messages, gain framing will be less persuasive than loss framing. Compared with loss-framed messages, gain-framed messages will (a) be perceived as having less informational value, (b) be perceived as less persuasive (i.e., less likely to influence subjects' future behavior), (c) elicit more negative beliefs toward the detection behavior, and (d) elicit more negative attitudes toward the detection behavior.

H_3: Anecdotal/gain messages will create a boomerang effect. Compared with control subjects who are not exposed to any advocacy, subjects who are exposed to anecdotal/gain messages will (a) have more negative beliefs toward the detection behavior and (b) have more negative attitudes toward the detection behavior.

Method

Target Behavior and Population

We tested our hypotheses in the context of a specific screening behavior: mammography. Breast cancer is one of the leading causes of death among women, causing about 44,000 deaths annually in the United States alone (Roberts 1996). One of the most effective ways to reduce breast cancer deaths is to encourage women to have regular screening mammograms. Among women older than 50 years of age, clinical trials indicate that screening mammography can reduce the mortality rate of this disease by 30%–50% (Reynolds and Jackson 1991). However, despite the procedure's benefits, many women either do not have mammograms at all or have them less often than is recommended by the medical experts. For example, only about 25% of Medicare recipients follow the National Cancer Institute recommendation to have annual mammograms (Centers for Disease Control and Prevention 1995a). Research indicates that attitudinal factors, including ambivalence about potential test outcomes, play a central role in women's failure to get mammograms (for a review, see Fuller et al. 1992).

Experimental Design

The study employed a 2 (statistical or anecdotal evidence) × 2 (gain versus loss framing) between-subjects experimental design with a control group. Control subjects were given the same procedure and questionnaire as treatment subjects but saw no experimental advertisement. Each of 174 subjects was assigned randomly to one of the five experimental conditions: 117 to one of the four treatment conditions, and 57 to the no-advertisement control condition.

Subjects

A total of 174 women over the age of 50 years were recruited from social and volunteer organizations in a Midwestern metropolitan area. As noted previously, women over 50 are the primary target for annual mammograms. To encourage participation, organizations received $1 per subject and a chance to win $250 in a lottery. Subjects' ages ranged from 51 to 89 years, with a mean of 70. Subjects were 67% white, 27% married (23% divorced, 39% widowed, 10% never married, 1% other), and 90% high school graduates, and 81% reported "good" or "excellent" health. Thirty-six subjects reported that a family member had had breast cancer.

Compared with U.S. population averages for women over age 50, women in our sample had slightly greater levels of self-reported health and education and were considerably less likely to be currently married (see Centers for Disease Control and Prevention 1999). Therefore, caution should be used in generalizing our findings to all women over age 50. However, analysis of our data indicated that subjects' attitudes toward mammography and breast cancer and their responses to the experimental messages did not differ according to their self-reported health status, education, or marital status.

Experimental Stimuli

The stimuli were four black-and-white advertisements. Each had the headline "Why Should You Get a Mammogram?" and contained the same basic information on breast cancer and mammography, which was drawn from health education materials produced by the National Cancer Institute and the American Cancer Society. All advertisements provided a telephone number "For information on where to obtain a screening mammogram near you" and a picture of a telephone.

However, the advertisements differed in the type of evidence used (statistical or anecdotal) and whether the consequences of mammography were framed in terms of gains or losses. Specific statistics were based on the clinical research finding that annual screening mammograms reduce a woman's chance of breast cancer death by 30%–50%. The statistical gain message used the more conservative figure: a 30% reduction in risk if a woman has a mammogram. The statistical loss message stated the equivalent risk increase: a 43% increase in risk if a woman fails to have a mammogram.[2] Initial versions of the messages were developed, pretested for ease of comprehension with ten women over 50, and revised. This resulted in the following four messages:

1. Statistical, gain: "Many women have no family history of breast cancer and have never felt any lump in their breast. But they follow the advice of the American Cancer Society and start having annual screening mammograms when they turn fifty. Because of this, doctors are able to detect their tumors at an early, treatable stage, and they are 30% less likely to die of breast cancer."
2. Statistical, loss: "Many women have no family history of breast cancer and have never felt any lump in their breast. So they don't follow the advice of the American Cancer Society to start having annual screening mammograms when they turn fifty. Because of this, doctors are not able to detect tumors at an early, treatable stage, and they are 43% more likely to die of breast cancer."
3. Anecdotal, gain: "No one in Sara Johnson's family had ever gotten breast cancer, and she had never felt any lump in her breast. But she followed the advice of the American Cancer Society and started having annual screening mammograms when she turned fifty Because of this, doctors were able to detect her breast tumor at an early, treatable stage, and now Sara can look forward to a long life, watching her grandson, Jeffrey, grow up."
4. Anecdotal, loss: "No one in Sara Johnson's family had ever gotten breast cancer, and she had never felt any lump in her breast. So she didn't follow the advice of the American Cancer Society to start having annual screening mammograms when she turned fifty. Because of this, doctors were not able to detect her breast tumor at an early, treatable stage, and now Sara may miss out on a long life, watching her grandson, Jeffrey, grow up."

Subjects received a booklet containing four black-and-white advertisements: a randomly assigned mammography advertisement and three dummy advertisements (for vitamins, soap, and insurance); the latter were the same for all groups. The treatment advertisement was always the second advertisement in the booklet. The control subjects did not see a mammography advertisement; in its place was a fourth dummy advertisement.

Manipulation and Confounding Checks

To verify that the anecdotal messages were more involving than the statistical messages, we conducted a pretest. We recruited 96 women over the age of 50 years (none of whom participated in the main experiment) from local organizations. Each subject viewed one (randomly assigned) message for 30 seconds and then reported agreement with six statements: "I got involved in what the ad had to say," "The ad's message seemed relevant to me," "This ad really made me think," "This ad was thought-provoking," "The mammogram ad was very interesting," and "I felt strong emotions while reading this ad." These six items formed a summed scale with a coefficient alpha of .96. Analysis confirmed that the anecdotal messages were significantly more involving (mean = 33.52) than the statistical messages (mean = 25.11; t = 6.81, $p < .001$).

Rothman and Salovey (1997) suggest that framing effects are moderated not only by involvement but also by the perceived risk of the behavior that is being promoted. Therefore, it was important to establish that subjects in the two evidence conditions did not differ in their perceptions of the risk in getting a mammogram. Toward this end, we conducted a second pretest. We recruited 65 women over the age of 50 years (none of whom participated in either the previous pretest or the main study) from local organizations. Each subject viewed one of the (randomly assigned) target messages for 30 seconds and then reported her agreement (on a seven-point scale) with five statements: "Getting a mammogram is risky," "Mammograms can lead to bad results," "Mammograms have uncertain outcomes," "Getting a mammogram makes me feel anxious," and "Getting a mammogram would cause me to worry." (These statements were based on Rothman and Salovey's [1997] and Dowling and Staelin's [1994] conceptualizations of perceived risk.) The five items formed a summed scale with coefficient alpha of .77. Perceptions of behavioral risk did not differ between subjects exposed to anecdotal messages (mean = 12.5) and subjects exposed to statistical messages (mean = 11.97; t = .33, $p = .75$).

Procedure

We randomly distributed booklets among groups of women at each participating organization. (Such organizations are frequently the setting for the presentation of health-related information to older adults; see, e.g., List et al. 1999.) While pretesting the materials, we had found that some women in this age group had difficulty completing scales. We made several modifications to the questionnaire to help facilitate this process. First, we used a 13-point type size to increase readability. Second, the experimental procedure began with a warm-up exercise in which subjects completed Likert scales for statements about a local retailer, which were unrelated to the study topic. When the warm-up exercise was completed and subjects indicated that they understood how to complete numerical scales, the experiment began. All subjects (both treatment and control) received identical instructions:

> We are interested in your thoughts about some health topics and about some advertisements for mature women focusing on those health topics. In a moment, you will be asked to view four proposed advertisements. We will give you about 30 seconds to look at each ad carefully. Please do NOT look back at any ad after the examiner says STOP. Directly behind these ads is a questionnaire.. . Due to the limited time, we will be asking different questions to different people.

No mention of breast cancer or mammograms was made before ad exposure. After ad exposure, subjects completed the questionnaire. Consistent with the cover story (that the study focused on "health topics," and "we will be asking different questions to different people"), all questionnaires stated, "You have been chosen to answer questions about mammograms (breast cancer screening x-rays) and other health behaviors concerning breast cancer."

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[2] These are equivalent because, for example, a .007 risk is 30% less than a .01 risk, but a .01 risk is 43% greater than a .007 risk. The 43% change in the statistical loss message may sound more dramatic than the 30% change in the statistical gain message, despite their mathematical equivalence However, as we show, the two messages did not elicit significantly different attitudes toward screening mammography.

Measures

Beliefs about target behavior. Subjects reported agreement (on a seven-point Likert scale) with 16 belief statements about breast cancer and mammography. These health belief items were adapted from prior studies of mammography behavior (Stein et al. 1992). The 16 items were entered into a principal components analysis by means of a varimax rotation, which produced four interpretable, orthogonal factors with eigenvalues greater than 1.0. The first factor was labeled "mammography benefits" (e.g., mammography can detect a tumor when your doctor can't, mammography is effective in early detection of breast cancer, breast cancer can be cured if detected early). The second factor represented "mammography barriers" (e.g., mammograms are embarrassing, inconvenient, painful, cost too much). The third factor represented "perceived susceptibility to breast cancer" (e.g., more likely than average to get breast cancer, get breast cancer sometime in life). The fourth factor was labeled "risk factor knowledge" (e.g., can develop breast cancer without symptoms, can develop breast cancer without a family history of breast cancer).

Evaluation of the advertisement. Subjects rated the informational value of the mammogram advertisement on eight semantic differential scales (believable/not believable, realistic/not realistic, factual/not factual, good/bad, useful/not useful, appropriate/not appropriate, helpful/not helpful, and educational/not educational). These items were combined to form a summed scale with a coefficient alpha of .74.

In addition, each subject assessed the likelihood that the advertisement would influence her behavior. Subjects were asked, "If you saw this advertisement in a magazine, how likely would you be to go and get a screening breast mammogram?" Finally, subjects' overall attitude toward screening mammography was assessed by asking them to express their agreement or disagreement with the statement, "I think women my age should have a yearly mammogram."

Results

Effects of Framing Within Anecdotal Versus Statistical Messages

Our first analyses examined whether the impact of framing on subjects' beliefs and attitudes varied depending on the type of evidence (statistical versus anecdotal) in the message. We conducted 2 × 2 analyses of variance (ANOVAs), in which the factors were evidence (statistical versus anecdotal) and framing (gain versus loss). The dependent variables included subjects' evaluations of the advertisement's informational value, perceived behavioral influence of the advertisement, beliefs about the target behavior and disease (benefits, barriers, susceptibility, and risk factor knowledge), and overall attitude toward the target behavior. Cell means from these ANOVAs are presented in Table 1.

Effects on advertisement evaluations. Neither framing nor evidence had a main effect on subjects' evaluations of the advertisement's informational value. However, there was a significant interaction between framing and evidence ($F(1,87) = 10.08$, $p = .002$). To test our hypotheses regarding this interaction, we analyzed the simple effects of framing within each of the two evidence conditions (see, e.g., Keppel 1982, pp. 214–19). As hypothesized, loss-framed information was evaluated as having significantly more informational value among subjects who were exposed to the (more involving) anecdotal messages ($F(1,87) = 10.45$, $p < .01$), whereas framing had no significant effect among subjects who were exposed to the statistical messages ($F(1,88) = 2.51$, N.S.).

Effects on predicted behavior. Framing and evidence also had an interactive effect on subjects' predictions of their own mammography behavior ($F(1,103) = 10.87$, $p = .001$).

TABLE 1
Experimental Cell Means

Dependent Measures[a]	Statistical Advertisements: Gain-Framed	Statistical Advertisements: Loss-Framed	Anecdotal Advertisements: Gain-Framed	Anecdotal Advertisements: Loss-Framed	No-Advertisement Control
Perceived informational value of advertisement	5.55	5.23	5.10[b]	6.07	N.A.
Perceived likelihood of having a mammogram, after seeing advertisement	5.48	4.37	4.07[b]	5.54	N.A.
Overall attitude toward mammography for women older than 50 years	6.38	6.17	5.28[b, c]	6.71	6.14
Perceived barriers to mammography	–.17	.18	.34[b]	–.44	–.11
Perceived susceptibility to breast cancer	.10	–.10	–.34[c]	–.11	.23
Perceived benefits of mammography	–.28	–.08	–.10	–.11	.03
Risk factor knowledge	–.20	–.10	.09	.01	.10

[a] Higher numbers indicate higher perceived informational value of advertisement, greater perceived likelihood of getting a mammogram, more positive attitude toward mammography, higher perceived barriers and benefits to mammography, greater perceived susceptibility to breast cancer, and greater risk factor knowledge.

[b] The difference between anecdotal, gain-framed and anecdotal, loss-framed messages is statistically significant at $p < .01$.

[c] The difference between anecdotal, gain-framed message and no-message control is statistically significant at $p < .05$.

As hypothesized, loss framing was more persuasive among subjects who were exposed to the anecdotal presentation (F(1,103) = 7.57, $p < .01$). Within a statistical presentation, the subjects who were exposed to the gain message had a slightly higher mean, but this effect was not significant at $p < .05$ (F(1,103) = 3.77, $p = .06$).

Effects on overall attitude toward screening mammography. The analysis also revealed a significant interaction of framing and evidence type on subjects' overall attitude toward the target behavior (F(1,108) = 7.19, $p = .008$). Within anecdotal messages, loss framing produced more positive attitudes toward the target behavior (F(1,108) = 11.14, $p < .01$). Within statistical messages, framing had no effect on mammogram attitudes (F(1,108) = .23, N.S.).

Effects on mammogram beliefs. There were no effects of evidence or framing on subjects' beliefs about their susceptibility to breast cancer, the perceived benefits of mammography, or risk factor knowledge. However, there was an interactive effect of framing and evidence on perceptions of the mammogram barriers (F(1,104) = 8.92, $p = .004$). In anecdotal messages, loss framing produced lower perceived barriers to mammography (F(1,104) = 8.65, $p < .01$). In statistical messages, framing had no significant effect (F(1,104) = 1.69, N.S.).

Mediation Analysis

Thus, among subjects exposed to the high-involvement anecdotal messages, loss frames were significantly more effective than gain frames. To help interpret these findings, we conducted mediation analysis. This analysis followed James and Brett's (1984): If the effects of an antecedent (A) on an outcome (O) are completely mediated by a third variable (M), the three simple correlations (r_{ao}, r_{am}, and r_{mo}) should be statistically significant, but the correlation between the antecedent and the outcome should become nonsignificant when the mediator is controlled (i.e., $r_{ao\ m}$ = N.S.).

We tested several mediational models, including one in which the impact of framing on predicted behavior was mediated by beliefs and attitudes toward the behavior:

> framing ⇒ perceived barriers ⇒ attitude ⇒ predicted behavioral response

However, although each of the successive simple correlations implied by this model is statistically significant (e.g., $r_{\text{framing.barriers}}$, $r_{\text{barriers attitude}}$, $r_{\text{attitude.intention}}$), the model does not stand up to mediational analysis. For example, the correlation between framing and predicted behavior remains significant, even after perceived barriers and attitude are controlled for. This indicates that the impact of framing on predicted behavior is not mediated by attitudes or perceived barriers.

In addition, when framing is controlled for, the correlation between attitude and predicted behavior becomes nonsignificant. According to Pedhazur (1982), this result suggests that framing either (1) mediates a causal relationship between attitude and predicted behavior or (2) jointly (and independently) influences both attitude and predicted behavior. Since framing was randomly manipulated, it is exogenous and cannot possibly mediate the relationship between two measured variables. Therefore, the remaining plausible explanation is the second: Framing jointly and independently influences both attitude toward the target behavior and predicted behavioral response to the advertisement; that is,

$$\begin{tikzcd} \text{framing} \arrow[r, Rightarrow] \arrow[d, Rightarrow] & \text{attitude} \\ \text{predicted behavioral response} & \end{tikzcd}$$

Further analysis indicates that the impact of framing on attitudes is completely mediated by beliefs about barriers to the target behavior. Consistent with James and Brett's (1984) criteria, all three simple correlations are statistically significant ($r_{\text{frame,attitude}} = .37$, $p < .01$; $r_{\text{frame,barriers}} = -.38$, $p < .01$; $r_{\text{barriers,attitude}} = -.41$, $p < .01$), but the impact of framing on mammogram attitudes becomes nonsignificant when perceived mammogram barriers are controlled ($r_{\text{frame,attitude barriers}} = .22$, $p = .117$).

The mediation analysis also suggests that the effect of framing on predicted behavioral response is mediated by evaluations of the advertisement's informational value. All three simple correlations are significant ($r_{\text{frame,behav}} = .34$, $p = .011$; $r_{\text{frame,adeval}} = .44$, $p = .004$; $r_{\text{adeval,behav}} = .58$, $p < .001$), but the effect of framing on predicted behavior becomes nonsignificant when advertisement evaluation is controlled ($r_{\text{frame,behav.adeval}} = .23$, $p = .131$).

Comparing the Treatment Groups with the Control Group

As noted previously, when prior studies have found more positive attitudes among subjects who were exposed to loss-framed (versus gain-framed) messages, they have tended to conclude that the loss-framed messages elicited proadvocacy attitude change. However, in the absence of a no-message control group, such findings are open to another interpretation: that gain-framed messages cause counter-advocacy attitude change. To examine this issue, our experiment included a no-message control group.

We compared the attitudes and beliefs of subjects who were exposed to the four framed advocacy messages with the control subjects, who saw no advocacy at all. Table 1 shows the control and treatment groups' beliefs and attitudes toward mammography and breast cancer. Measures that referred specifically to the mammogram advertisement (e.g., advertisement evaluation) obviously were not applicable to the control group. We made significance tests using Dunnett's table of critical values for comparing treatment and control groups, where k (the total number of groups) equals 5 (see Winer, Brown, and Michels 1991, pp. 462, 977–78).

The control group comparisons produced several interesting findings. They revealed that the mammography attitudes and beliefs of subjects who were exposed to the low-involvement statistical advertisements were not significantly different from those of subjects who saw no mammogram message at all (all t-statistics less than 1). Thus, our findings not only suggest that framing has little effect on low-involvement subjects (as Block and Keller [1995] and Rothman et al. [1993] find) but also support Taylor and Thompson's (1982) finding that subjects tend not to rely on statistical information when making judgments (see also Brosius and Bathelt 1994; Hogarth 1980).

Consistent with prior theory (e.g., Maheswaran and Meyers-Levy 1990; Wright and Weitz 1977), control-group comparisons suggest that highly involving framed information influenced subjects' attitudes and beliefs about the advocated behavior. However, the pattern of this influence departed somewhat from that predicted in prior framing research. As we hypothesized, subjects who were exposed to a highly involving gain-framed message had substantially more negative attitudes and beliefs toward mammography than subjects who were exposed to no message at all. Indeed, the counteradvocacy effects of the gain-framed message appear to be stronger than any proadvocacy effects of the loss-framed message. Women exposed to the anecdotal/gain message had significantly less favorable overall attitudes toward mammography than the control subjects did ($t = 2.26$, $p < .05$) and were significantly more likely to deny their susceptibility to breast cancer than the no-advertisement controls ($t = 2.48$, $p < .025$). In addition, the anecdotal/gain subjects seemed to perceive greater mammogram barriers than the no-advertisement controls, though this difference ($t = 1.88$) did not reach statistical significance at the .05 level, according to the fairly conservative Dunnett test.

Although subjects exposed to the anecdotal/loss message had higher mean attitudes toward mammography ($t = -1.48$) and lower perceived barriers to getting a mammogram ($t = 1.43$), these effects were weaker than the counteradvocacy effects of the gain message, and none of the loss/control comparisons reached statistical significance. Therefore, it is not clear that the loss message created proadvocacy attitude change, as prior framing researchers suggest. However, the gain messages created counteradvocacy attitude change.

Depth Interviews

To aid further in the interpretation of the experimental findings, we conducted depth interviews among members of the target audience. The use of depth interviews to interpret experimental findings dates back at least to Merton and Kendall's (1946) classic article on the focused interview. These authors note (p. 542) that "The primary purpose of the focused interview was to provide some basis for interpreting statistically significant effects of mass communication" in experimental studies. In particular, they advocate the use of depth interviews "to locate the source of ... 'boomerang effects' in film, radio, pamphlet and cartoon propaganda" (see also Gorden 1980).

Fourteen women, ranging in age from about 50 to 80 years, were recruited to participate in individual depth interviews. None of these women had participated in the original experiment. Each subject was asked to examine each advertisement (anecdotal gain-framed and anecdotal loss-framed) for approximately 30 seconds and then report any "thoughts or feelings" she had while reading that advertisement (see Merton and Kendall 1946, p. 550). The order of advertisement presentation was varied from one interview to the next. After subjects had reported their reactions to each advertisement, they were asked to report their feelings and experiences regarding mammography. Subjects' comments were audiotaped, professionally transcribed, and then organized according to recurring themes (see Leydon et al. 2000; Ritchie and Spencer 1994).

Responses to the gain-framed message. As might be expected, many subjects reported positive emotions after reading the upbeat, gain-framed messages. For example,

> "[I feel] happy. You felt positive after reading it, ... just a positive message."
>
> "It is positive and hopeful ... because she can look forward to a long life."
>
> "[I]t has a happy ending."
>
> "[I]t is giving her hope."
>
> "[I]t's warm inside and everything is wonderful."
>
> "It makes me feel better already."
>
> "[It] leads you to hope that things work out better. A positive outlook."

For many products, such positive feelings would be likely to enhance the persuasive power of an advertisement (see Monahan 1995). However, the elicitation of positive feelings is likely to have two effects that reduce subjects' motivation to use a disease-screening product. First, the elicitation of positive feelings may give subjects a false confidence that they are not vulnerable to the disease. Forest and colleagues (1979, p. 161) find that "People who are feeling good may exaggerate their sense of control over the environment and may feel less vulnerable." Consistent with this, the subjects in our experiment who were exposed to the anecdotal, gain-framed message perceived themselves to be significantly less susceptible to breast cancer ($p < .025$) than did the control subjects. In addition, several interviewees reported that the gain-framed message, though pleasant, was almost too reassuring—that it did not create a sense of urgency to get a mammogram and even fostered a sense of complacency:

> "It doesn't do anything to create a sense of urgency.. Again, going back to the sense of urgency. Unless I have something that I'm concerned about, why go through it? ... Squashing your breasts ..."
>
> "[I]t's not a threat. And if you are not concerned about it, you are not going to accept that threat as your own."
>
> "[T]here might be some women that the positive one would not have touched."
>
> "[S]he never felt a lump, so she didn't see any reason to do anything. And so in that case, you know, if it's not broke, don't fix it."
>
> "Well, I would probably think, well you know that is really something that I need to do, but maybe I'll do it next week."
>
> "I would probably never stop and look at this message because I would think 'oh, I know.'"
>
> "It didn't have the same emotional impact as [the loss-framed message]."

Second, the elicitation of positive feelings can make subjects less willing to engage in a task they perceive to be unpleasant. For example, both Forest and colleagues (1979) and Isen and Simmonds (1978) find that though elicitation of positive feelings generally makes subjects more likely to engage in helping tasks, there is a notable exception: The elicitation of positive feelings makes subjects less likely to engage in a helping task that they perceive to be unpleasant. Forest and colleagues (1979, p. 168) conclude that "persons who are feeling good are concerned about preserving their mood and will avoid activities that they expect would destroy their good feelings." Citing this research, Monahan (1995, p. 93) speculates that "If people are generally negatively disposed to an idea (say, wearing a condom), inducing positive affect ... may cause recipients of the message to denigrate the idea even further." Women clearly perceive mammography to be an "unpleasant task." When asked to discuss the procedure, subjects gave long and eloquent litanies of its short-term costs, including pain, expense, inconvenience, embarrassment, and fear.

> "The fear of it maybe being painful.... [Y]ou get caught up in everyday life and you just don't do the things you should."

> "[I]t is uncomfortable.... [I]f you've never done it before it is real scary.... [Y]ou don't know what is going to happen in there.... [T]hat's real scary, ... just the idea that a stranger is going to have you lay your [breast] up [on] a plate and squash it.... [B]efore I had my first one, I was really frightened of what it was going to be like, ... that and the expense if [you] don't have insurance."

> "A lot of insurance doesn't pay for them.... If I didn't understand the reason for them, I wouldn't get them either because they hurt.... A man had to have designed that machine.... [J]ust the denial kind of thing. Some women just don't want to know. If I pretend it's not there, it will go away."

> "They are uncomfortable.... And there are so many jokes about it [i.e., the pain].... I think, ... am I somehow increasing my chances, you know, x-rays, radiation? ... [Y]ou can never do it, at least not through my health plan. You can't do it at the same time you make your doctor's appointment. And so they give you a sheet and tell you to come back any time, but then there is like a line. I'm busy and I don't do it."

> "[Women] are fearful of it,... especially some women who don't go to the doctor regularly are fearful of just what it entails, the procedure itself. And [some] people who are afraid because they think they do have something and so it's better not to know you have something."

> "I think [women] hear that it hurts. They think it costs a lot of money for people who don't have access to it easily.... [I]ts not easy to get a mammogram actually.... I just think it's denial and inaccessibility and cost. And convenience. And it does hurt."

> "I think in general women don't [take] care of their health for themselves as much as for their family members. They are busy with work and looking after everybody else, and they put themselves last. That's the reason. Lack of information about what goes on in a mammogram. And there is some fear that it might be painful."

> "The pain.. . You have to take time out of your day to go to the out clinic and get it all taken care of. Insurance doesn't cover it like it does other things."

> "They hurt, ... [and] it is a scheduling issue.... [J]ust working it into your time and schedule, and you are looking at a time in women's lives when they are raising kids and working.... You don't have time to breathe. Much less, schedule a pancake squeeze"

> "I think the cost. Just other stories that they have heard about, that they hurt, ... and some could even be embarrassed to have to go in to get a mammogram.... [Y]ou're supposed to go in yearly, and you get too busy and forget."

Responses to the loss-framed message. Subjects' reactions to the loss-framed message were, in many ways, the reverse of their responses to the gain-framed message. Whereas the gain-framed advertisement elicited positive feelings, the loss-framed message tended to elicit negative emotions, especially fear.

> "This one is more scary.... I guess this one would be like if you wanted to scare somebody, this one would probably do it."

> "Ooh, ... it's depressing. You know, they were not able to detect and Sara may miss out on a long life, watching her grandson. And that's just depressing. I was thinking, you know, she could. If you don't catch breast cancer, the chances are it gets into the bone."

> "I'm scared when I read this one"

> "That one is scary and I don't want to deal with it."

However, despite (or perhaps because of) the negative emotions elicited by the loss-framed message, many women found it compelling, especially in motivating an otherwise reluctant woman to take action:

> "Some people would have to have something ... hit them in the face before they do anything about it."

> "[T]he fear of something happening I think maybe gets your attention and makes you start thinking that maybe this is something I need to do."

> "This one is like, wow, should they do it and look at all the negative things that are happening because she didn't do it"

> "[H]ow important it is to follow the advice to get a mammogram because she didn't and now she's not going to see her grandson grow up, and telling you ... the risk patients are not following the advice.... I would take it just a little more to heart because it's telling that she did not see her grandson grow up and telling you, you know, well when the other one said she did so things worked OK, then this one shows things are not OK so you might tend to go along with it."

> "That hit home a little more because ... she didn't get to see him grow up."

> "My reaction is how sad that she is not going to see her grandson.... How important mammograms are."

> "The person would miss out on a lot of her life because she didn't go get a mammogram ... They're fearful. And this kind of plays along with that."

> "[T]his could happen to you too. You know, if you think about it this could happen to you if you don't get your mammogram."

> "This [would affect people] because it seems more likely that Sara will die. And I think we all are afraid of death.... I guess I'll take care of it now."

> "[I]t has a little more shock value to it. I guess it maybe draws you up a little shorter. You know, if you figure you are not going to watch your grandson grow up, that kind of thing might catch my attention more than something that says everything is fine."

> "I think it's a fear that a woman has of having breast cancer and having this example where she is missing out on family life. It just strikes you more than a happy life that turned out OK."
>
> "[S]omething could have been prevented that wasn't because she didn't have the checkup. And the consequence is terrible. So, it just seems the consequence from that ... is more striking than the good consequence of getting it.... I think the fear factor is working.... But I've known women who died of breast cancer, so maybe I can relate to that one."
>
> "Because it's scary. It gives the idea that this can happen to you."
>
> "That one hurts more. That one strikes home. You know, the thought of missing things in life.... That's what really struck me on that one... Because that is more of a real threat. The idea that, OK, I have a lump, maybe I can get it treated. There is no sense of urgency in that. But ... if you are going to miss something ... that makes it much more real."

Discussion

Although early-detection behaviors offer great potential benefits, consumers are often reluctant to engage in them. As a consequence, communication campaigns promoting these behaviors often meet with limited success. Our research examines how the persuasiveness of early-detection advocacies is affected by two message design factors: whether the consequences of screening are communicated through anecdotal or statistical evidence and whether these consequences are framed in terms of potential losses or potential gains.

As hypothesized, the effects of framing were moderated by the type of evidence employed in the persuasive messages. Among subjects exposed to the low-involvement statistical messages, framing had no significant attitudinal effect. However, among subjects exposed to high-involvement anecdotal messages, gain framing (compared with loss framing) elicited significantly more negative evaluations of both the advertisement and the advocated behavior. To this point, our findings are consistent with those of prior studies (e.g., Block and Keller 1995; Maheswaran and Meyers-Levy 1990; Wright 1981).

However, our experiment also produced some novel findings that may shed new light on the interpretation of message framing effects. When prior researchers have found that subjects exposed to loss-framed messages had more positive attitudes than subjects exposed to gain-framed messages, they have attributed this difference to proadvocacy attitude change created by the loss-framed messages. However, our experiment, employing a no-message control group, suggests a different interpretation. When we compared the attitudes and beliefs of our treatment groups with those of our control group, the results indicated that at least some of the effect of framing occurred because the anecdotal, gain-framed message had a negative effect on women's attitudes toward mammography. These data suggest that some framing effects may be due to a boomerang effect of the gain-framed message.

Why does this boomerang effect occur? Our data (from both the experiment and the depth interviews) show that consumers perceive screening to have many short-term negative consequences, and their perceptions of these negative consequences mediate the effects of framing on consumers' attitudes toward screening. Gain-framed messages are viewed as providing relatively weak arguments for getting screened, and these arguments do not provide consumers with a sufficient justification for enduring the short-term costs of the target behavior. In contrast, loss-framed messages are viewed as providing a more powerful argument for why consumers should endure the short-term discomfort of being screened.

Many health communicators favor gain-framed messages because they believe that such messages create a positive emotional response among the target audience (Backer, Rogers, and Sapory 1992; Monahan 1995). Consistent with this view, our interview subjects reported that the gain-framed message evoked pleasant emotions, including happiness and hopefulness. Ironically, however, the pleasantness of gain-framed messages may be one source of their weakness in promoting early detection. Previous research (e.g., Forest et al. 1979; Isen and Simmonds 1978) has found that after exposure to pleasant stimuli, subjects tend to perceive themselves to be less vulnerable and are less willing to engage in behaviors they perceive to be unpleasant. Consistent with this, subjects in our experiment who were exposed to the upbeat, gain-framed anecdotal message had both significantly more optimistic perceptions of their chances of getting breast cancer and significantly more negative attitudes toward getting a mammogram than did control subjects exposed to no mammogram message.

How do our findings compare with the "conventional wisdom" among designers of health communication campaigns? Backer, Rogers, and Sapory (1992) find that the majority of health communicators strongly favor the use of positive (gain-framed) messages. In summarizing these views, Backer, Rogers, and Sapory (1992, p. 30) state that health campaigns "are more effective if they emphasize positive behavior change rather than the negative consequences of current behavior. Arousing fear is rarely successful as a campaign strategy.... Campaigns are more effective if they emphasize current rewards rather than the avoidance of distant negative consequences."

Several of Backer, Rogers, and Sapory's (1992) respondents expressed concern that negatively framed appeals create a boomerang effect, reducing compliance with the message. For example, one respondent stated, "Unless fear appeals are done very cleverly, the evidence suggests that a negative reaction will be produced. The audience tends to discount the message or to behave counter to the message or simply to deny the message" (Backer, Rogers, and Sapory 1992, p. 54). In contrast, none of Backer, Rogers, and Sapory's respondents discussed circumstances under which gain-framed messages might be ineffective, much less cause a boomerang.

Further evidence regarding health marketers' attitudes toward gain versus loss framing can be obtained by examining the promotional materials they produce. We collected and content-analyzed 15 widely distributed promotional pieces that were designed to promote disease screening. These pieces encompassed several behaviors (including screening for breast cancer, colon cancer, and cervical cancer), sponsors (National Cancer Institute, American Cancer Society, a state health department, and a drug industry group), and media (print advertisements, pamphlets, media releases, Web sites, and slide shows). Of the 15 pieces, 14 contained only gain-framed arguments, and 1 included a combination of gain- and loss-framed arguments. Of 39 total framed statements, 37 were gain-framed, and 2 were loss-framed. Four of the messages were anecdotes about specific women who had gotten breast cancer, and all were gain-framed: Because of early detection, each of these women can look forward to healthy, productive lives.

Why do gain-framed arguments tend to dominate such campaigns? According to Latour and colleagues (Latour and Rotfeld 1997; Latour, Snipes, and Bliss 1996), there is a widespread wariness of negatively framed messages among marketing communication professionals, stemming, at least in part, from a misreading of the "fear appeal" literature. Although the modal finding of 50 years of research is that fear appeals are generally effective (see Hale and Dillard 1995; Latour and Rotfeld 1997; Petty and Cacioppo 1981), the one experiment every communication professional seems to remember (the "mainstay of textbooks," according to Latour and Rotfield 1997) is Janis and Feshbach's 1953 experiment, in which the ineffectiveness of a message that showed the dire consequences of poor dental care was attributed to "defensive avoidance." Among campaign designers afraid of such potential backlash to negative appeals, gain-framed appeals are apparently viewed as the safe alternative.

Areas for Further Research

Further research could build on the present study in several ways. First, it would be interesting to examine the long-term effects of evidence type and framing on consumer attitudes toward early detection, as well as their effects on actual screening behavior. Such behavioral follow-up would be somewhat challenging for mammograms, which are generally given (at most) annually or semiannually; however, it might be more feasible for screening behaviors that are performed more frequently (see Meyerowitz and Chaiken 1987).

Second, further research should examine the effects of message framing in increasingly naturalistic settings. For example, rather than provide subjects with a single forced exposure to a framed message, future experimenters should consider embedding framed messages unobtrusively among other media content to which consumers are exposed (e.g., a magazine, television program) as well as examining how repeated exposure may moderate the effects of framing (see Eagly and Chaiken 1993, pp. 286–87).

In addition, further research should continue to explore how framing effects are influenced by consumers' prior perceptions of the behavior being promoted. Of particular interest is the distinction, stressed by Rothman and Salovey (1997), between health behaviors aimed at detection versus prevention. Rothman and Salovey argue that consumers view detection behaviors in terms of their negative short-term consequences; therefore, they are especially receptive to loss-framed messages that advocate such behaviors. Our findings support that position. Our subjects associated mammography with a variety of unpleasant consequences (discomfort, inconvenience, embarrassment, and fear) that are shared by many screening behaviors, including tests for cancers of the colon, cervix, and prostate and HIV infection. In addition, our data indicated that the effect of message framing on attitudes toward the target behavior was mediated by consumers' perceptions of these negative consequences.

However, Rothman and Salovey's (1997) statements regarding prevention behaviors seem more debatable. They argue that consumers perceive prevention behaviors as having few negative consequences, and therefore consumers are more receptive to gain-framed appeals for these behaviors. For example, Rothman and Salovey (1997, p. 9) state that "In contrast to detection behaviors, the salient function of a preventive behavior is to provide a relatively certain, desirable outcome." But is this statement valid? The specific prevention studies Rothman and Salovey review focus on innocuous behaviors with few negative short-term consequences (e.g., using sunscreen or infant car seats). However, there are other prevention behaviors that consumers perceive as having substantial short-term costs. For example, many elderly people avoid having annual flu shots because they are afraid that the shot will hurt or make them sick (Centers for Disease Control and Prevention 1995b). Similarly, many women at risk of HIV infection fear the short-term consequences (especially the reactions of their partners) of insisting on the use of a condom (see, e.g., Darroch and Frost 1999). Further research should examine the relative effectiveness of loss- versus gain-framed messages in motivating prevention behaviors (e.g., vaccination, condom use, smoking cessation) that consumers perceive to entail significant short-term sacrifice.

Finally, further research should examine the extent to which the phenomena observed in this study apply not only to health-related behaviors but also to a much broader range of consumer behaviors. There are many situations in which consumers must decide whether to endure relatively certain immediate costs to avoid uncertain (but much more severe) future costs. For example, consumers may face this type of avoidance–avoidance conflict when deciding whether to purchase life or disability insurance or whether to perform expensive preventive home maintenance. In promoting such behaviors, should marketers employ the kind of gain-framed messages (e.g., "Thank God, Bill had life insurance") generally favored by marketing communicators (see LaTour and Rotfeld 1997), or is it possible that such messages are too reassuring to be effective? This would be a worthwhile avenue for further research.

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Book Reviews

Paul E. Green

The Vagaries of Becoming (and Remaining) a Marketing Research Methodologist

Recently, I received an e-mail from Terry Clark, editor of the *Journal of Marketing*'s Book Review section, asking me to "talk about your development over the years as a marketing scholar. Why did Paul Green get into marketing? Who/what influenced him? What twists and turns has his career taken? How does he go about doing research? How does he pick his topics? What are his idiosyncrasies?" This essay represents an attempt to respond to Terry's questions and, in the process, comment on some recent trends in research. (However, I'll go easy on the idiosyncrasies.)

The Early Years

> *random walk:* the path taken by a point or quantity that moves by steps, where the direction of each step is determined randomly

In the fall of 1946, armed with a university scholarship and the GI Bill, I began my freshman year at the University of Pennsylvania's College of Arts and Sciences. Starting in the fifth grade, I had maintained an almost single-minded interest in chemistry. Most of my spending money went for home laboratory equipment. I fortunately managed to avoid blowing up the lab (with me in it), though I had a few close calls along the way. Once, while running some experiments with a Tesla high voltage coil, I accidentally brushed against a standing water paper in our attic; the results were not pretty.

When I entered Penn, I fully intended to major in chemistry and eventually become a research chemist. To my dismay, all the chemistry courses I wanted to take were being reserved for GIs who were majoring in premed, so I decided to major in mathematics and, being ever mindful of eventually needing a job, economics as well. I put my background and interest in music to good use by performing a few nights a week with some other part-time musicians. We worked in a variety of local bars and bistros, all of dubious reputation.

After the first year of college, I found that I quite liked my dual economics/mathematics major and decided to stick with it. Meanwhile, the music gigs provided ample income for a full-time student. I resisted an offer to go on the road with a traveling combo; summer jobs at the New Jersey shore provided sufficient fun and thrills.

Graduating from Penn in January 1950, I landed a job at the Sun Oil Company's home office in Philadelphia. After a one-month mandatory stint in the mail room, I was given my first real job as a statistical research analyst. Because Penn offered graduate courses in statistics, I decided to enroll part-time in the university's master's degree program and earn an A.M. degree. I was extremely lucky to have Simon Kuznets (later a Nobel Prize winner in economics) as my master's thesis advisor.

Three years later (armed with the master's degree), I was approached by the Lukens Steel Company in Coatesville, Penn., to work in its marketing research department. This relatively new department was engaged in carrying out business-to-business market studies for its major steel plate and weldments customers. While at Lukens, I became engrossed in the then-fledgling field of operations research (OR). The company sent me to several OR short courses taught by West Churchman and Russ Ackoff at the Case Institute of Technology. My manager asked me to start a small OR group at Lukens, and I jumped at the chance. Our three-person group quickly got involved in work scheduling, inventory control, and simulation problems. The work was sufficiently interesting to management for it to give me the opportunity to enroll (part-time) in Penn's doctoral program in statistics. In 1958, while still at Lukens, I was approached by a recruiting firm to explore a job opening in market planning at DuPont's Wilmington headquarters. I took this job and, with my new manager's approval, continued (part-time) the doctoral program in statistics at Penn.

In 1961, eight years after receiving the A.M. degree, I received a Ph.D. in statistics. My dissertation was in the then-arcane fields of Bayesian statistics and Von Neumann–Morgenstern utility theory. I was able to use these new concepts in some real-world research at DuPont. My doctoral dissertation advisor and longtime friend, Morris Hamburg, introduced me to Bayesian inference and expected utility concepts. I became an ardent proponent of these ideas, particularly as they related to the modeling of the cost versus value of marketing research information (Green 1963).

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Wroe Alderson and My Beginning Years as an Academic

During my last couple of years in Penn's doctoral program, I had the pleasure of sitting in on some of Wroe Alderson's lectures in the marketing department. Wroe was a major figure in the world of marketing research. Earlier, he had headed his own research firm, Alderson and Sessions. After selling his interest in the firm, he focused his considerable energies on teaching and academic research.

Wroe's first book, *Marketing Behavior and Executive Action* (Alderson 1957), was a landmark publication; many of its concepts are as fresh today as when they first appeared. During the last two years of my doctoral studies, I had the opportunity to spend a lot of time with Wroe. When he asked me if I would be interested in an academic appointment, I was overjoyed.

In the summer of 1962 I left DuPont and started, full-time, in Wharton's marketing department. I also joined Wroe, as a consultant, in his new research firm, Behavior Systems. I was pleasantly surprised to learn that DuPont was interested in my consulting services. I spent a year and a half in this capacity while still teaching at Wharton.

During this same time, Wroe and I completed a book together, called *Planning and Problem Solving in Marketing* (Alderson and Green 1964). Here, I had the opportunity to show how some relatively new tools, including Bayesian analysis, could be used to address marketing problems. A couple of years later, Don Tull and I published the text *Research for Marketing Decisions* (Green and Tull 1966). This book was completed through the mails, because Don was then at California State University, Fullerton. (The book was published and on the market before we had the opportunity to meet in person.)

Wroe's influence on marketing science was broad and deep. In the mid-1950s, he initiated the marketing theory seminar (held in alternate years at the University of Vermont and the University of Colorado). We Young Turks were treated to the experiences and wisdom of the early marketing scholars, including Leo Aspinwall, Lyndon Brown, Richard Clewett, Paul Converse, Ewald Grether, Edmund McGarry, and Hugh Wales, to name a few. The seminars continued until Wroe's death in 1965 at the age of 68.

The Marketing Science Institute

In the early 1960s, Wroe was also instrumental in persuading Thomas McCabe, president of Scott Paper Company, to found the Marketing Science Institute (MSI), Wendell Smith being selected as its first director. Patrick Robinson and Michael Halbert were hired as principal investigators. The institute's quarters were only a stone's throw from Wharton.

Meanwhile, Wharton's marketing department was acquiring an impressive portfolio of new talent—Ron Frank, Jerry Wind, Len Lodish, Scott Armstrong, Peter FitzRoy, and Irv Gross all arrived in the mid- to late 1960s. Several of us were asked to consult on MSI's research projects.

During one such project, involving experimental gaming on how managers process and act on "noisy" information, Peter FitzRoy and I became interested in psychometric techniques as related to correlates of risk aversion (Green, FitzRoy, and Robinson 1967). One thing led to another, and before I knew it, I was deeply involved in multidimensional scaling (MDS) and clustering methods; this epiphany occurred in the mid-1960s. I have been interested in these areas ever since.

After the experimental gaming project was completed, Frank Carmone (then at MSI) and I were able to meet and work with some of the major psychometricians of the 1960s, including Clyde Coombs, Warren Torgerson, Roger Shepard, Joe Kruskal, and Doug Carroll. Doug, in particular, became my MDS mentor and has continued to keep me up to date ever since. Out of that beginning came the Workshop on Multidimensional Scaling, sponsored by Bell Labs and the University of Pennsylvania and held at Penn in June 1972. Scholars came from around the world to present papers.

Between 1968 and 1972 I was involved in producing three monographs—two on MDS (Green and Carmone 1970; Green and Rao 1972) and one on conjoint analysis (Green and Wind 1973). Continued research in MDS, clustering, conjoint analysis, discrete choice, latent class analysis, and general multivariate data analysis still proceeds apace. Major contributors to this area include Wayne DeSarbo, Michel Wedel, Wagner Kamakura, Jordan Louviere, Moshe Ben Aikiva, Greg Allenby, Eric Bradlow, and Roland Rust, to name just a few.

Starting in the late 1960s (and continuing to the present day), I learned much about scaling techniques from Doug Carroll, my friend and collaborator for many years and currently the Board of Governors Professor of Management and Psychology at Rutgers University. He and I wrote two books together (Green and Carroll 1976, 1978) and have another on the way (coauthored with Jim Lattin). Other researchers who have influenced my thinking include Jerry Wind, with whom I have worked the longest—since 1966 when he joined Wharton. Frank Carmone, now at Wayne State University, Vithala Rao at Cornell, and Wayne DeSarbo at Pennsylvania State University have all collaborated with me on various articles over the years. (I have, indeed, been fortunate in the company I have kept.)

The Past 20 Years or So

My interest in marketing research methodology started in the 1960s and continues to this day. My principal collaborator during the last two decades has been Abba Krieger, the Robert Steinberg Professor of Statistics at Wharton. Abba's technical background in theoretical mathematics, OR, and statistics (with degrees from Massachusetts Institute of Technology and Harvard) is outstanding. Helped by Abba's creativity and diverse skills, my interest in data analysis and descriptive modeling has taken a turn toward optimization modeling. The research that Abba and I have done over the past two decades reflects an emphasis on normative modeling, such as conjoint simulators and optimizers, competitive pricing models, customer satisfaction optimization, optimal reach analysis, and a variety of other efforts that have led to decision support systems.

Meanwhile, we continue to work on clustering methods, conjoint modeling, market segmentation, and various kinds of hybrid models for preference analysis. In summary, my old areas of research have not disappeared—they have been revisited and extended. Most important, I am still interested in models and techniques that have (actual or potential) relevance for managerial decision making.

One of the fringe benefits of working with cluster analysis, MDS, conjoint analysis, and other multivariate techniques is that their application often leads to practical (and sometimes high-profile) results:

- Cluster analysis has been used in IBM's change from an industry-based to a needs-based segmentation strategy (entailing personal computers). Other examples include the development of AT&T's "Reach out and touch someone" advertising campaign and a psychographic-based cluster analysis for General Motors' Chevrolet division.
- A variety of problems has been approached by means of MDS methods, including, for example, tracing the results of Life cereal's advertising campaign (involving moving earlier perceptions of the cereal as a strictly nutritional product to one that also appeals to children). Also, MDS was used in developing Coca-Cola's slogan, "It's the real thing!"
- Conjoint analysis has been applied to a host of applications, including hotel design (Marriott's Courtyard and Ritz Carlton's offering of deluxe services), AT&T's first cellular telephone, the E-Z Pass toll collection system (now used in New York, New Jersey, and parts of Pennsylvania), and IBM's Risc 6000 and AS400 computer design and pricing.
- Thousands of conjoint studies have been carried out over the past 30 years. Commercial software is readily available for most of these techniques, and all the larger marketing firms provide consulting help on their application.

Now that I have discussed my own research and the sizable impact of my colleagues on that research, a few more general comments on research practice may be of interest.

The Sociology of Research

Over the past 40 years it seems to me that research in marketing has moved rapidly away from the single-author articles and more toward collaboration among scholars. This is also true in marketing research methodology. The inducements are many: Friendships, complementary and compatible skills, similarity of interests, and ticking tenure clocks are just a few reasons.

On examining my curriculum vitae recently, I noted that over the past 40 years, I have collaborated with 55 different coauthors, 23 of whom were academics, 10 are former doctoral students of mine, and 22 are research practitioners. I have thoroughly enjoyed working with every one of them. Rare is the case that I have not learned something from collaborations with my colleagues, whether they were peers, students, or practitioners.

For the fun of it, I took my top seven collaborators (using a cutoff of at least 12 joint publications with me.) Their rank order in terms of number of coauthored publications is as follows: Krieger, Carroll, Carmone, Wind, Rao, Schaffer, and DeSarbo. These scholars, representing 13% of my coauthors, accounted for more than half of my joint publications. Although I have not attempted to replicate the venerable "20/80 rule," my publication history seems to reflect the tendency (at least in my case) to stay with scholars with whom common interests and respect remain over extended periods of time.

Big ideas in market research methodology are rare, and any researcher is fortunate to be associated with one, let alone several, over the course of a career. I have tried to develop the methodological skills needed to tackle various substantive problems, be they research questions on segmentation, pricing, competition, product positioning, or whatever. (This is not the same as learning a technique and going around solely looking for cases in which it can be applied.)

For me, the research process generally starts with a problem. Then I draw on the set of skills and models that promise (or do not) to provide useful solutions. Other researchable problems stem from critiquing others' research, accepting consulting assignments, trying to answer students' or colleagues' questions, and even self-critiquing my own prior research.

As I see it, there are two kinds of researchers in marketing research methodology. The first has a broad range of interests and becomes attracted to interesting and often offbeat problems that appear to be amenable to solutions. Typically, the solutions are interesting and creative but often lack transfer value to other classes of problems. The second type of researcher starts out with a related set of topics (e.g., interest in clustering methods) and spends time researching the literature, looking for unsolved aspects of the methodology, and tackling one or more of these unsolved problems. The second approach has the added value of leading to cumulative research contributions that relate to a specific domain, such as conjoint analysis or hierarchical clustering. Although the second approach tends to be more time consuming, it also prompts the researcher to look for incompletely solved subproblems or new problems that arise with new findings. Over time, this type of researcher usually has the better chance of making more interconnected contributions to the field.

With few exceptions, my research has focused on methodologies that promise to help practitioners cope with certain classes of problems, such as market segmentation, product positioning, price/demand relationships, distribution, product design, customer satisfaction, and so on. Researchers who take this path do so on the expectation that the client/decision maker will make better decisions if these tools and techniques are correctly used.

Of course, this is not the only type of research strategy that methodologists need follow. Quite the contrary: Several new research niches have emerged in recent years. Examples include causal modeling and covariance structure analysis, economic modeling of marketing phenomena, and game theory. Because each has attained a critical mass of researchers whose work now appears in top marketing journals, I say a few words about each.

Causal Modeling

With the introduction of sophisticated statistical techniques (Bentler 1985; Jöreskog and Sörbom 1978; Wold 1985), causal models began appearing in marketing (Bagozzi 1980) during the late 1980s, and their growth accelerated during the 1990s. Although causal modeling is not without its critics (e.g., Cliff 1983; Freedman 1987), it has attracted considerable attention, particularly among consumer behavior researchers. Causal modeling is concerned more with the descriptive aspects of behavior and ways to test theories of how buyers (and managers) make decisions than with normative prescription. The presence of such studies in the journals and research textbooks is a testimony to their growing importance. An area of emerging applicability for causal modeling seems to be customer satisfaction, in which industry practitioners are beginning to investigate the potential value of covariance structure analysis and partial least squares models in tracking and analyzing customer satisfaction problems.

Economic Modeling

Another area of intense research activity is economic modeling. Moorthy (1993) provides a clear and nontechnical description of this research stream. He views economic modeling as consisting of the following components:

1. The researcher observes a phenomenon.
2. The researcher constructs an economic model to explain the phenomenon.
3. The researcher develops a set of assumptions to help define the model.
4. The researcher explores the logical consequences of the model: (a) The consequences should be at least consistent with the observed phenomenon; (b) some of these consequences should be empirically testable; and (c) other consequences might describe the phenomenon if the model were perturbed, that is, if the decision maker's environment were different.

These guidelines do not rule out other (possibly better) models. Note also that the approach is basically descriptive. The theoretical model builder does not have to make normative recommendations or tell the business person how to make better decisions. This is in contrast with decision support models that are designed to provide a mathematical description of a managerial problem with the intent of finding an improved (possibly optimal) solution to some aspect of current business practice. Economic modeling has become a fast-growing enterprise. Applications of the approach routinely appear in *Marketing Science*, and articles are also starting to appear in *Journal of Marketing Research* (Hauser and Wernerfelt 1989; Lal 1990) and *Marketing Letters* (Ingene and Parry 1998).

Game Theory

Although game theory also relies heavily on economic modeling, its principal feature entails two or more players whose fates are intertwined in various ways. Examples include Moorthy's (1984) work on buyer self-selection. Green and Krieger (1997) describe the application of Nash equilibrium in the context of new product design, in which researchers' interest is in long-term return optimization, given the responses of rational opponents. Choi and DeSarbo (1993) and Choi, DeSarbo, and Harker (1990) also discuss related competitive issues in the context of choice modeling.

My limited experience with game theory leads me to believe that game-theoretic notions—even under highly simplifying assumptions—can still offer useful insights into product design decisions, such as identifying product attribute levels that are reasonably resistant to rational competitive retaliation. Although game-theoretic model formulations employ highly simplifying assumptions, they can provide help in tracing out the possible consequences of short-term actions on long-term payoffs. Although marketing researchers' acceptance of causal modeling approaches has been more or less universal, I believe that all three research niches—causal modeling, economic modeling, and game theory—will continue to attract young scholars with theoretical interests and methodological training. The main problem seems to be in constructing interesting marketing theories in which the methodology can be fruitfully used.

A Summing Up

As I look back over my research career of over 40 years (my first publication was in 1957 when I was at the Lukens Steel Company), I like to think that my many collaborators and I have made some useful contributions to marketing research methodology. In turn, I have had the pleasure and honor of working with extremely talented colleagues, ranging from those in the early years (Jerry Wind, Ron Frank, Frank Carmone, Doug Carroll, Arun Jain, Vithala Rao, and Wayne DeSarbo) to those later on (including Cathy Schaffer and, particularly, Abba Krieger, my latest coauthor). Abba and I have coauthored 45 articles in the approximately two decades that we have worked together.

If my thoughts are at least close to the mark, researchers in marketing are entering the age of research "pluralism," in which methodologists, economic modelers, and consumer behaviorists will live side by side and learn from one another. They will need at least four skill sets: teaching basic material (possibly remote from their own specialty), tolerating others' specialties, being mindful of the needs of business practitioners, and engaging in self-criticism of their research. Hopefully, the expected fragmentation will nonetheless continue to produce useful scholarly output—at least in the long run. Because marketing academics work for business schools, it would be a decided plus if the output were eventually important to somebody, say, the business practitioner or the MBA student.

As for future scholarly research, I still see a need for prescriptive research methodology that can help managers make more informed decisions. I also find it useful and refreshing to open the door to researchers who are less interested in prescriptive modeling than in understanding how the marketing world works, be it first-mover advantage, competitive duopoly, vertical structure payoffs, or what have you. Prescriptive and descriptive researchers can easily live side by side. Often both talents exist in the same researcher.

As for me, it is comforting to know that not everything is brand new. As I write this essay, I note that empirical and hierarchical Bayesian techniques are now quite the rage in choice modeling and related areas. They are more sophisticated than the Bayesian concepts I learned in the early 1960s; still, it is nice to know that "new wine in old bottles" is something more than a catchphrase.

As far as the vagaries of remaining a marketing research methodologist are concerned, it now seems inevitable that I have stayed a marketing researcher. With no talent for or interest in administration, I successfully avoided making the mistake of believing I had either.

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Vanitha Swaminathan, Richard J. Fox, & Srinivas K. Reddy

The Impact of Brand Extension Introduction on Choice

This article focuses on the impact of a new brand extension introduction on choice in a behavioral context using national household scanner data involving multiple brand extensions. Particularly, the authors investigate the reciprocal impact of trial of successful and unsuccessful brand extensions on parent brand choice. In addition, the authors examine the effects of experience with the parent brand on consumers' trial and repeat of a brand extension using household scanner data on six brand extensions from a national panel. In the case of successful brand extensions, the results show positive reciprocal effects of extension trial on parent brand choice, particularly among prior non-users of the parent brand, and consequently on market share. The authors find evidence for potential negative reciprocal effects of unsuccessful extensions. In addition, the study shows that experience with the parent brand has a significant impact on extension trial, but not on extension repeat.

As competitive pressures mount, brand marketers seek ways to achieve growth while reducing the cost of new product introduction and the risk of new product failure. One popular brand strategy is to attach an existing brand name to a new product introduced in a different product category, that is, brand extension. Such a strategy is often seen as beneficial because of the reduced new product introduction cost and the increased chance of success (Kapferer 1994). In addition, a brand extension can produce reciprocal effects that enhance or diminish the equity of the parent brand.

Reciprocal effects research has focused on examining attitudinal changes toward the parent brand. From a managerial perspective, it is interesting to examine the impact of trial of an extension on choice and market share of the parent brand. Extension trial should strengthen consumers' propensities toward buying the parent brand unless the extension experience is negative. This effect should be most pronounced among consumers who have low levels of loyalty toward the parent brand, because parent brand sales are already maximized among highly loyal consumers. The role of category similarity in moderating reciprocal effects has also been examined in an attitudinal context, but not in an actual purchase context. In addition, the reciprocal effect of extension purchase across prior users and prior nonusers of the parent brand has not been studied.

In addition to the potential benefits associated with positive reciprocal effects, the use of brand extensions provides economies in securing trial in the marketplace, as noted previously. In the words of Allan Maccusker, president of a brand consultancy group, "A lot of marketers are going this [the brand extensions] route because an established brand name will generate, hopefully, quicker trial by consumers and then heavier repurchase" (*Advertising Age*, p. 12). The assumption underlying the use of the brand extension strategy is that extensions induce trial due to brand awareness among existing consumers. However, little research empirically tests the role of brand extensions in inducing trial in the marketplace. Therefore, another goal of this research is to examine the relationship between prior experience with the parent brand and extension trial and repeat.

In summary, this research has three major objectives. First, we investigate the reciprocal effects of extension trial on parent brand choice among users and nonusers of the parent brand. Second, we examine the role of category similarity as a moderator of reciprocal effects. Third, we investigate the impacts of experience with the parent brand on trial and repeat of a brand extension.

We address the objectives outlined through a series of three studies. In Study 1, we demonstrate positive reciprocal effects of extension trial among prior nonloyal users and nonusers of the parent brand. In addition, we demonstrate that parent brand experience has a significant effect on extension trial but not on repeat. In Study 2, we examine the role of category similarity as a moderator of positive reciprocal effects. In Study 3, we show the existence of negative reciprocal effects associated with an extension product failure.

Researchers in the brand extensions area have relied primarily on marketing experiments conducted in lab settings in which consumers are typically provided with descriptions of hypothetical brand extensions and are asked to provide their instantaneous reactions (e.g., Aaker and Keller 1990; Keller and Aaker 1992). One limitation of this type of

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research is that effects may be overstated (Dacin and Smith 1994). In addition, reciprocal effects develop over time and frequently cannot be captured using this approach. Furthermore, the extensions are hypothetical and not necessarily indicative of what a firm would really consider doing. Finally, lab experiments such as those just described cannot capture the impact of actual experience with a brand extension on future purchasing in the parent category. Thus, although previous research offers valuable insights regarding brand extension strategies from a theoretical perspective, the use of these highly controlled lab experiments has, to some extent, limited the usefulness of this research from a managerial perspective. One exception is the research by Erdem (1998), who examined household purchase data collected after the brand extensions had been introduced and demonstrated that quality perceptions transfer between umbrella-branded products in the case of the companion categories of toothpaste and toothbrushes. Another exception is the research by Kim and Sullivan (1998), who model trial and repeat of a new brand introduction in the context of line extensions. However, neither of these studies explicitly focuses on testing a framework of positive and negative reciprocal effects.

We examine the phenomena of both direct and reciprocal effects across multiple brand extension cases by using ACNielsen scanner panel data to monitor household purchasing immediately before and after extension introduction. In addition, we provide a conceptual framework to examine factors that moderate reciprocal effects. An in-market study involving brand extension strategies and real brands provides rich insights for managers interested in evaluating the risks and merits of extension strategies.

All the brand extensions examined in this study represent national extensions of well-known brands. Although specific brand names and categories are not revealed because of the proprietary nature of the data, we provide examples and details of the categories to help interpret the results. We examine reciprocal effects by modeling parent brand choice, using extension brand experience as an independent variable. We develop logit models of extension trial and repeat using parent brand experience variables and other relevant purchase factors as independent variables to demonstrate direct effects. The article is organized as follows: First, we present a conceptual framework and hypotheses. Second, we describe the data. Third, we present an overview of the models along with the associated measures; describe Studies 1, 2, and 3; and discuss the key findings. In conclusion, we discuss the implications of this research and directions for further research.

Conceptual Framework

As previously noted, there has been mixed support for the existence of positive and negative reciprocal effects in the literature. Keller and Aaker (1992) find that positive reciprocal effects exist only when an average-quality parent brand introduces a successful extension. Keller and Sood (2000) posit that evaluations of parent brands that are already well regarded will not change significantly as a result of favorable extension experience. Gurhan-Canli and Maheswaran (1998) show that enhancement effects exist for brand extensions that are similar to the parent brand.

In general, previous research finds support for the moderating role played by category similarity in influencing both positive and negative reciprocal effects. Milberg, Park, and McCarthy (1997) show that negative reciprocal effects can occur when extension similarity is extremely low. Keller and Sood (2000) demonstrate that negative reciprocal effects can also occur when the extension is highly similar to the parent brand. Gurhan-Canli and Maheswaran (1998) show that dilution of a family brand name occurs in response to incongruent and negative information, particularly when the extension is similar to the parent brand. The evidence regarding the existence of negative reciprocal effects at the brand attribute level is also considerable (e.g., Loken and Roedder-John 1993; Roedder-John, Loken, and Joiner 1998). However, it is less clear whether negative reciprocal effects exist at the overall attitude level (Keller and Aaker 1992).

To illustrate the process of reciprocal effect formation in an actual choice setting, we present a hypothetical example. Suppose Nivea, known for its skin-care products, introduces a cosmetic product under the Nivea brand name. The new product is tried by a group of consumers who are heterogeneous in their prior experience with Nivea skin care products. Assuming that the new entry is a success, the trial of the product is generally a favorable experience. The trial of the Nivea cosmetic furnishes new information regarding the Nivea brand name to both prior users and prior nonusers. Consistent with previous work in the context of product experience, such as Hoch and Deighton's (1989) and Kempf and Smith's (1998), the learning provided by the product experience will lead to strongly held beliefs regarding the Nivea cosmetic. Previous brand literature has viewed brand knowledge as a network of beliefs and associations (Roedder-John, Loken, and Joiner 1998). Therefore, the beliefs regarding the Nivea cosmetic product are transferable to the Nivea skin care brand.

However, two conditions must be present for the transfer to occur. First, the extension information must be deemed relevant in the parent category. Previous research has identified category similarity between the extension and parent categories as necessary for the extension information to be considered relevant, a condition satisfied in our Nivea example (Keller and Aaker 1992; Loken and Roedder-John 1993). Second, for this transfer to occur, the beliefs about the parent brand must undergo a change. Roedder-John, Loken, and Joiner (1998), in the context of flagship products, suggest that the network of beliefs linked to the flagship product tends to be extreme, strongly held, and resistant to change because of the accumulated exposure and experience with the flagship product. The discussion regarding flagship products is relevant to our analysis of the core parent brand. The beliefs associated with the core parent brand are likely to be of varying strength across different segments of consumers. Among segments of consumers that already have a high level of loyalty toward the Nivea skin care brand and have a well-developed set of associations regarding this brand, the provision of new information regarding Nivea cosmetics is unlikely to produce a significant change. This is particularly true if the new information does not significantly contradict the existing knowledge structure.

The consumers with a high degree of loyalty toward the Nivea skin care brand are likely to have beliefs and associations that are resistant to change. According to Roedder-John, Loken, and Joiner (1998), these may be viewed as brands that have a well-developed memory structure as a result of frequent exposure and direct experiences. Again, consistent with Roedder-John, Loken, and Joiner's (1998) arguments, the accumulated exposure and direct experiences among prior users of the parent brand make the parent brand beliefs of highly loyal prior users less resistant to change. Conversely, among segments of consumers with moderate to low loyalty toward the parent brand, the less frequent exposure to the parent brand suggests that these consumers' parent brand beliefs and associations are likely to be more amenable to change.[1] Therefore, the potential for a positive reciprocal effect is strongest among segments of consumers with low to moderate loyalty toward the parent brand.

Although this scenario applies to a successful brand extension, another possibility is negative reciprocal effects due to unsuccessful brand extension. Suppose that the Nivea cosmetic is discontinued in the marketplace because of low market share. Therefore, it is likely that extension triers were generally not favorably disposed toward the new product and that trial furnishes negative or at least neutral information regarding the brand. Among prior users, the provision of new negative information regarding an extension product is likely to contradict existing knowledge structures, particularly among consumers with high levels of prior loyalty toward the parent brand. However, because the propensity to purchase the parent brand among prior nonusers is already zero, the provision of new negative information cannot result in a negative reciprocal (behavioral) effect among these consumers. Therefore, negative reciprocal effects of extension failure can be observed only among prior users, especially those with high loyalty toward the parent brand.

In summary, the introduction of a brand extension that is successful is likely to result in positive reciprocal effects. These positive reciprocal effects are likely to be moderated by category similarity; there will be stronger reciprocal effects under conditions of high category similarity. Conversely, negative reciprocal effects may be associated with a failed extension product. These negative reciprocal effects are likely to be strongest under conditions of high category similarity. We therefore propose that positive and negative reciprocal effects of extension trial on parent brand choice exist and are moderated by category similarity. Further positive (negative) reciprocal effects in the context of purchase behavior are limited to consumers with low to moderate loyalty toward the parent brand (users of the parent brand). A summary of the proposed effects is presented in Figure 1. In addition, experience with the parent brand is likely to increase the propensity to try the extension but not to repeat. In the next section, we outline the first of three studies designed to test this framework.

Study 1

Reciprocal Effects of Brand Extension Introduction on the Parent Brand

As noted previously, research regarding both positive and negative reciprocal effects has been somewhat mixed. Ceiling effects associated with well-regarded brand names, difficulties associated with examining attitudinal shifts in

FIGURE 1
A Framework of Positive and Negative Reciprocal Effects

		Category Similarity			
		High		Low	
Brand Extension	Successful	Prior Nonloyal Users of Parent Brand Positive	Prior Nonusers of Parent Brand Positive	Prior Nonloyal Users of Parent Brand No effect	Prior Nonusers of Parent Brand No effect
	Unsuccessful	Prior Users of Parent Brand Negative	Prior Nonusers of Parent Brand No effect	Prior Users of Parent Brand Negative	Prior Nonusers of Parent Brand No effect

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[1] This is not to discount the possibility that there may be negative associations among prior nonusers. Because prior nonusers are defined as people who have not tried the parent brand in a one-year time period prior to extension introduction, any negative experience with the parent brand occurred at least one year before extension introduction. Following Feldman and Lynch (1988), we note that the passage of time should weaken information accessibility, which in turn may weaken the potential negative associations among prior nonusers or highly infrequent users.

experimental settings, and the omission of prior usage as a moderating variable may account for some of these mixed findings in past research. Consumers are likely to be heterogeneous in their purchasing of a brand. It is not possible to enhance purchase probability of a brand among highly loyal users of the brand, simply because propensities to purchase the brand are already so high. This "ceiling effect" argument is consistent with the prior research findings that point out that evaluations of well-regarded brand names generally do not change on account of exposure to favorable extension information (Keller and Aaker 1992). However, among users with moderate to low levels of loyalty, the exposure to the extension brand may induce positive reciprocal effects by enhancing brand familiarity, strengthening brand attitude, and ultimately increasing the likelihood of purchasing the parent brand.

For prior nonusers, extension trial provides new information regarding a brand. Information generated from product trial typically results in increased brand recall and stronger brand attitudes, which in turn have a powerful impact on parent brand evaluation and purchase (Kempf and Smith 1998; Smith and Swinyard 1982; Wright and Lynch 1995). Thus, increases in memory and familiarity and attitudinal shifts resulting from the extension trial experience should induce reciprocal effects for the parent brand among prior nonusers. Consistent with these arguments, we expect that positive reciprocal effects of extension trial will be observed among prior nonloyal users and nonusers.

Impact of Parent Brand Experience on Extension Trial

Consumer behavior research suggests that information or learning gathered from product usage is often granted a special status by consumers (Hoch and Deighton 1989; Kempf and Smith 1998; Smith and Swinyard 1982). Information gathered from personal experience is more vivid and therefore more memorable (Kempf and Smith 1998). Because information from product experience is self-generated, it is deemed more trustworthy than information gathered from advertising or communications, which results in strongly held beliefs (Smith and Swinyard 1982). Thus, consumers with parent brand experience have greater parent brand knowledge, better recall of the parent brand, and greater confidence in their beliefs about the parent brand than consumers with no parent brand experience. It has also been suggested that an existing brand name provides an assurance of quality, thereby reducing the risks involved in purchasing a new product (Erdem 1998; Wernerfelt 1988).

Although both the direct effects of parent brand on the extension and the reciprocal effects are cross-category effects, brand extension researchers typically examine these as distinct processes. Whereas the former refers to formation of brand evaluations for a new brand introduction, the latter refers to changes in the evaluations of an existing brand. On the basis of these arguments, we hypothesize that parent brand experience increases the likelihood of extension trial.

Impact of Parent Brand Experience on Repeat Purchase Behavior

Information economics theory suggests that the quality of the product is unambiguously revealed during product use (e.g., Nelson 1970, 1974). This is especially true when the product quality can be gauged accurately even with a single exposure to the product.[2] Thus, when the extension has been tried, the repeat purchase decision should depend on the evidence furnished by the trial experience rather than parent brand experience. In addition, the familiarity with the extension among both past users and nonusers of the parent brand is likely to be similar after the extension has been tried. Therefore, we expect that parent brand experience has no impact on repeat purchase of the brand extension.

Data

The data for this study, obtained from ACNielsen, provide household purchase histories for selected product categories for a national panel in the time period 1990–94. We used purchase data for three brand extensions introduced during this time period to test the hypotheses. Household purchase histories in the parent categories are available for approximately one year preceding the extension introduction and for one year following extension introduction. For each of the extension categories, data are available for one year following extension introduction. Given the nature of the categories examined, such as foods and personal care items, we believe that one year is sufficient to capture variations in purchase behavior due to the extension. The fictitious names Alpha, Gamma, and Zeta are introduced to label the three parent brands and their respective extensions. Alpha refers to a large personal care brand extended into a related personal care category. An example of this type of extension might be Nivea introducing Nivea beauty soap. Gamma refers to a food product extended into a related food category. An example of this type of extension is Hershey's introducing Hershey's chocolate milk. Zeta is a personal care brand extended into another personal care category (different from Alpha). An example of this type of extension is Dial bar soap introducing Dial deodorant. All three extensions leveraged the parent brand positioning in the extension category.

Criteria for qualifying households. Households in the panel enter and leave continuously. To ensure comparability in preextension and postextension introduction purchases, consistencies in time available for trial, and so forth, we constructed a "static" panel of participating households for each study. For each of the three cases, we included a household in the panel if it recorded at least one purchase in either of two frequently purchased categories during the first six months and during the last six months of the particular two-year study period. To eliminate households that are infrequent users, we further required households to have made at least two purchases in both the parent and the extension categories during the one-year period following extension introduction and two purchases in the parent category in the one-year period before extension introduction.

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[2] There may be conditions in which the influence of parent brand experience goes beyond the initial trial of the extension This may be the case when products contain experience attributes whose qualities can only be gauged with repeated exposures to the product. This may also be true in the case of credence goods whose product quality is impossible to evaluate even after consumers have experienced the product. Other conditions in which a confirmatory bias may apply may include highly technical products that require a great deal of expert knowledge and image products (Hoch and Deighton 1989) This study is restricted to frequently purchased packaged goods products for which these conditions are not likely to apply

Sometimes, an extension rollout takes place over a relatively long time period, so an important consideration is the date of extension introduction in a market. We identified the date on which the first purchase of the extension brand was made in a market, and we used the week prior to this date as the introduction date for the extension brand in that market. To balance the time available for purchasing before and after extension introduction, we excluded markets where the extension introduction took place either very early or very late.[3]

Descriptive Data

Table 1 contains information regarding the characteristics of both the parent and extension categories for the brands Alpha, Gamma, and Zeta. Also provided are data regarding market share and share of voice based on percentage of advertising expenditure for the parent brand categories before extension introduction and for the extension brands following extension introduction. The data provided in Table 1 give an overview of the types of product categories and the nature of competition in the categories used in this study. In addition, we use the information from Table 1 to gain insights into our findings.

Reciprocal Effects of Extension Trial on Parent Brand Choice

Model development and measures. A model of household choices in the parent category demonstrating that significant changes in the likelihood of parent brand purchasing are observed after the trial of the extension in the extension category would provide strong evidence of the existence of reciprocal effects. We examine reciprocal effects of extension trial using a binary logit model in which the dependent variable is parent brand choice.[4] The unit of analysis is an individual choice occasion. Therefore, there are multiple observations for each household. The model includes household heterogeneity, marketing-mix effects, and the effects of competition as independent variables. We estimate the model using purchase data for the parent category for the static panel in the time period following extension introduction. We describe the variables used in the logit choice model next.

TABLE 1
Key Characteristics of Parent and Extension Categories: Study 1

	Alpha		Gamma		Zeta	
Variables	**Parent Category**	**Extension Category**	**Parent Category**	**Extension Category**	**Parent Category**	**Extension Category**
Category description	Personal care	Personal care	Food	Food	Personal care	Personal care
Number of brands	18	25	45	7	25	22
Average interpurchase time (in weeks)	19.871	11.301	6.546	10.594	11.301	13.119
Strength of the brand[a]						
Market share[b]	22%	5%	12%	4%	6%	1%
Share of voice[c]	14%	15%	3%	4%	3%	2%

[a]Figures for market share and share of voice for the parent brand refer to the time period prior to extension introduction. For the extension brand, the figures reflect the market share and share of voice one year after the extension was introduced

[b]Data obtained from various issues of *Market Share Reporter* (1990–95).

[c]Share of voice figures were obtained from *LNA/Mediawatch Multimedia Service* (1990–95).

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[3] For brand Alpha, the dates of introduction varied over a 46-week period. In balancing the time period before and after extension introduction, we were able to retain 50% of the markets For the brands Gamma and Zeta, we retained approximately 80% of the markets.

[4] The multinomial logit model has been widely used in previous research (Guadagni and Little 1983; Kamakura and Russell 1989) to model brand choice behavior and capture price elasticities and changes in market structure. The multinomial logit model allows for the capture of competitive marketing-mix effects However, in our context, because the focus is one brand introducing a brand extension, the binary logit approach with the choice of the parent brand as the dependent measure is a parsimonious approach to modeling the choice behavior in the parent category The binary logit is also preferred because the loyalty coefficient in the multinomial logit does not enable us to estimate the incremental effect of the brand extension on choice of the parent brand over and above the impact of parent brand loyalty. This is because the loyalty coefficient is a general coefficient for all brands in the category and not specific to the parent brand. Because it is important to assess this incremental effect in the context of this research, the binary logit with the choice of the parent brand as the dependent variable is better suited to the purposes of this study.

Parent brand experience (EXP). Prior experience with the parent brand is operationalized as a loyalty measure, that is, the frequency of purchasing the parent brand compared with the other purchases made in the category. This relative frequency measure is consistent with those in previous studies that measure brand loyalty (Russell and Kamakura 1994). This variable is constant for all choices made during the time period following extension introduction.[5]

Relative price (RELPRI). We calculated the relative price per gram of the parent brand by indexing the parent brand's price per gram to a weighted average of the previous 14-day average price per gram or ounce for the major brands; weights were determined by market shares.[6] Because data on competitors' prices are not available with every purchase, this is an approximate measure of competitive pricing.

Reciprocal effects indicator variable (IND). The reciprocal effects indicator is a dummy variable that indicates whether the extension was purchased on or before the date when a purchase in the parent category is made. This indicator variable is a "switch" that goes "on" (takes the value 1 as opposed to 0) when the extension trial takes place.

Displays (DISP) and advertisements (AD). The display and feature advertisement variables were also dummy (0/1) variables that indicated the presence of displays or feature advertisements associated with the parent brand.

Reciprocal effects logit model. Let X = 1 or 0 depending on whether or not the parent brand is chosen on a category purchase occasion. The probability that the parent brand is chosen is given by

(1)

$$P(X = 1) = \frac{e^{\alpha + \beta_1(EXP) + \beta_2(RELPRI) + \beta_3(IND) + \beta_4(DISP) + \beta_5(AD)}}{1 + e^{\alpha + \beta_1(EXP) + \beta_2(RELPRI) + \beta_3(IND) + \beta_4(DISP) + \beta_5(AD)}},$$

which can be rewritten as follows:

(1a)
$$\ln[P(X = 1)/P(X = 0)] = \alpha + \beta_1(EXP) + \beta_2(RELPRI) + \beta_3(IND) + \beta_4(DISP) + \beta_5(AD),$$

where α and β_1 through β_5 are parameters to be estimated.

Overall model significance and predictive validity are judged, respectively, by means of the likelihood ratio test statistic (χ^2) and the classification accuracy (as judged by the percentage correctly classified).[7] Because of unequal group sizes, the percentage correctly classified is compared with a benchmark based on a proportional chance criterion (Morrison 1969).[8]

The estimates for the reciprocal effects of extension trial for brands Alpha, Gamma, and Zeta are presented in Table 2. Reciprocal effects cannot exist at very high loyalty levels (e.g., for households with a 100% loyalty). Therefore, the analysis was restricted to households with a parent brand loyalty of less than 80% but greater than zero.[9] Prior nonusers were analyzed separately. Among extension triers, only households that have had the opportunity to purchase in the parent category at least once following the trial of the extension were included in the analysis. Because the impact of the extension introduction was expected to vary on the basis of prior usage, the analyses for prior users and prior nonusers are presented separately.

In the case of the brand Alpha, displays and advertising information were not included, because these factors were active in less than 1% of the purchases made in this category. In the case of the brand Zeta, the display information is not included for the same reason. The reciprocal effect variable (IND) is significant at the 1% risk level for extensions Alpha and Zeta, but it is not significant for brand Gamma. The odds ratio for the reciprocal effect variable is 16 in the case of the brand Alpha and 52 in the case of the brand Zeta.[10] This suggests that in the case of the brand Alpha, extension trial enhances the odds of purchasing the parent brand as opposed to some other brand by 16 times. Similarly, in the case of the brand Zeta, extension trial enhances the odds of purchasing the parent brand by 52 times. Across all three extensions, the parent brand experi-

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[5] Heterogeneity has received increased attention in the modeling literature (Chintagunta, Jain, and Vilcassim 1991) because estimates of parameters of discrete choice models that ignore heterogeneity are likely to be biased and inconsistent (Hsiao 1986). Heterogeneity among households is incorporated in our model through parent brand experience (EXP).

[6] One of the limitations of using market shares of the major competitors as weights is that the heterogeneity in consideration sets across households is not captured. Given the dynamic nature of consideration sets across time and over purchase occasions (Andrews and Srinivasan 1995) and the need for information on marketing-mix variables (e.g., exposure to television advertising) to capture heterogeneity in consideration sets accurately, we did not incorporate this heterogeneity into the assessment of relative price. We acknowledge this as a limitation in the measurement of relative price. We thank the reviewer who pointed this out.

[7] Typically, a holdout sample is used to avoid bias in estimating the predictive accuracy of a model. The logistic regression program in SAS uses a "jackknifing" approach that omits the observations one at a time and classifies them as "events" or "nonevents" on the basis of the model, which is estimated without the observations being classified. Because the SAS procedure provides an unbiased measure of predictive validity, we do not use a holdout sample to assess predictive validity (see SAS Institute Inc. 1983, p 45).

[8] The proportional chance criterion is based on the hit rate, $\alpha^2 + (1 - \alpha)^2$, where α is the percentage of times the parent brand was purchased.

[9] The argument for truncating the loyal consumers at those with less than 80% loyalty is a conceptual one. Among perfectly loyal consumers, it is not possible to observe increases in the probability of purchasing the parent brand, because loyalty is already so high (a ceiling effect). An analysis of the distribution of frequencies across the various loyalty levels showed that across all categories, an 80% level of loyalty cutoff appeared to discriminate reasonably between the perfectly loyal group and the less than loyal group, because of a concentration of households around the 80% cutoff point across categories. We also did sensitivity analyses to ensure that choosing alternative cutoffs, such as 75%, 85%, and 90%, did not change the results significantly.

[10] The odds ratio for the brand Zeta is a large number because the brand has a relatively small market share in the parent category. Therefore, the prior probabilities of purchasing this brand are low.

TABLE 2
Reciprocal Impact of Extension Trial on Parent Brand Choice

	Prior Users			Prior Nonusers	
Variable	**Alpha**	**Gamma**	**Zeta**	**Alpha**	**Gamma**
Constant	–.111 (.485)	–.743* (.328)	–2.516* (.485)	–2.732* (.409)	–.459 (.165)
Parent brand experience (EXP)	1.749* **5.751** (.762)	4.563* **95.938** (.236)	4.224* **88.340** (.253)	—	—
Relative price (RELPRI)	–.798* **.450** (.240)	–.710* **.492** (.312)	.214 **1.239** (.538)	–.374 **.688** (.319)	–.709* **.492** (.159)
Reciprocal effects indicator (IND)	2.795* **16.359** (1.054)	.142 **1.152** (.085)	3.955* **52.180** (.399)	1.451* **4.269** (.532)	–.139 **.091** (.869)
Advertisements (AD)	—	.730* **2.074** (.280)	.092 **1.097** (.538)	—	.424* **1.528** (.127)
Displays (DISP)	—	–.308* **.735** (.167)	—	—	.032 **.085** (1.032)
Sample size Choice	176 97	4546 1726	2840 769	261 19	19,415 4540
$-2 \text{ Log L } \chi^2$	40.158 ($p = .000$)	554.331 ($p = .000$)	581.295 ($p = .000$)	46.118 ($p = .000$)	30.838 ($p = .000$)
Percentage correctly classified	67%	69%	79%	93%	77%
Proportional chance	50%	52%	60%	87%	64%

*Significant at the $p < .01$ level.

Notes: Figures in boldface represent odds ratios; figures in parentheses represent standard errors.

ence variable is significant at the 1% risk level.[11] In the case of Gamma and Zeta extensions, the parent brand experience variable is the most influential of all the variables. In the case of the Alpha extension, the impact of the reciprocal effects indicator variable appears to be more influential than parent experience or relative price. Across all three extensions, the overall model is significant at the 1% level. The incremental percentages correctly classified using the model over and above the proportional chance criterion for the brands Alpha, Gamma, and Zeta are 17%, 17%, and 19%, respectively.

Reciprocal effects were also examined among prior nonusers of the parent brand, (i.e., EXP = 0). The results for extension trial among prior nonusers of the parent brand are also presented in Table 2. The limitations imposed on households to be included in the reciprocal effects model, that is, at least one purchase in the parent category following extension trial, resulted in a limited sample in the case of the brand Zeta, which precluded analysis of prior nonusers in this case. The impact of extension trial on parent choice is significant in the case of brand Alpha but is not significant for brand Gamma. Reciprocal effects of brand extension introduction were examined in terms of market share for a macro perspective. The parent brand market shares were compared before and after extension introduction among extension triers (see Table 3).[12]

Significant increases in market share were observed among prior nonusers for all three cases and among prior nonloyal users for brand Alpha. In the case of brand Zeta, there were indications of share increases among parent brand users, though this difference was not significant.

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[11] Note that the parent experience variable is expressed in terms of the frequency of purchasing the parent brand relative to all purchases made in the parent category. EXP is therefore a fraction that assumes a value between 0 and 1. The reason that the odds ratios are so large is that they represent changes in parent brand experience from 0 to 1, that is, 1 unit of the independent variable.

[12] We conducted a t-test to examine differences in market share before and after extension introduction. Because the shares were drawn from the same sample, a test for differences must account for correlations in the shares. This procedure is outlined by Cochran (1977).

TABLE 3
Percentage Change in Parent Brand Market Shares Before and After Extension Introduction: Means and Standard Deviations of Differences

Extension	Prior Nonusers and Extension Triers (% Change)	Prior Users and Extension Triers (% Change)
Alpha	+8.1%** (.040)	+13%* (.090)
Gamma	+9.7%** (.020)	–4.5%n.s (.043)
Zeta	+7%** (.023)	+2.5%n.s (.028)

*$p < .01$.
**$p < .05$.
Notes: Figures in parentheses represent standard deviations of the differences. n.s. = not significant.

These results are consistent with the previous findings regarding the relatively weak reciprocal effects in the case of prior nonloyal users of brand Gamma.

Impact of Parent Brand Experience on Extension Trial and Repeat

Model development and measures. In this section, the impact of parent brand experience on extension trial and repeat is quantified. Dichotomous dependent variables are introduced on the basis of classifying each household in the static panel as an extension trier or a nontrier (for the trial model) and classifying triers as either repeaters or nonrepeaters (for the repeat model). Thus, each household constitutes one observation for the trial model, each trier household constitutes one observation for the repeat model, and the information for each of the independent variables is captured at the household level, as opposed to the transaction level as in the previous analysis. The independent variables in the models are discussed next. Values for these variables were obtained through household purchase histories before extension introduction.

Parent brand experience (EXP). As discussed previously, parent brand experience is operationalized in terms of relative frequency of buying the parent brand in the parent category.

Deal proneness (DPRONE). Deal proneness is defined as the degree to which a consumer is influenced by sales promotion. We measured active deal proneness using Webster's (1965) deal proneness measure. For each household and for each brand in a given household's purchase history, we calculated the difference between the percentage of times a given household used a coupon when purchasing the particular brand and the average percentage of times a brand was bought using a coupon across all households. The overall deal proneness measure is a weighted average of this difference for the brands bought by a household; the weights are market shares of the brands for the given household. Because information regarding deal proneness in the extension category before extension introduction was not available, we used the household's deal proneness in the parent category as a proxy for deal proneness in the extension category. This is consistent with prior research that suggests that there is a generalized deal proneness construct that results in a correlation in deal proneness across categories (Bawa and Shoemaker 1987).

Category experience (TOTCAT). Prior research suggests that the effect of brand knowledge may be different if the consumer is regarded as an expert rather than a novice in the context of the extension category (Broniarczyk and Alba 1994; Smith and Park 1992). The frequency of purchasing in a category is an indicator of the knowledge or expertise in a category (Alba and Hutchinson 1987). The number of purchases in the extension category after extension introduction was introduced as a third variable that influenced extension trial and repeat.

Trial model. Let T = 1 or 0 depending on whether or not a household purchases the extension. The equation for the probability of trial is

$$(2)\quad P(T = 1) = \frac{e^{\alpha + \beta_1(EXP) + \beta_2(DPRONE) + \beta_3(TOTCAT)}}{1 + e^{\alpha + \beta_1(EXP) + \beta_2(DPRONE) + \beta_3(TOTCAT)}},$$

which can be rewritten as follows:

$$(2a)\quad \ln[P(T = 1)/P(T = 0)] = \alpha + \beta_1(EXP) + \beta_2(DPRONE) + \beta_3(TOTCAT),$$

where the left-hand side represents the log odds ratio. If a coefficient, β_1, β_2, or β_3, is significant, the corresponding variable has an impact on the log odds ratio.

Table 4 presents results of the logistic regression analyses for the trial and repeat models. The overall trial model is significant across all three extensions (as shown in Table 4). The percentage correctly classified is 77% for the brand Alpha, and the incremental classification over and above a proportional chance criterion is 12%. In the case of the brand Gamma, the percentage correctly classified is 75%, and the incremental percentage correctly classified is 13%. In the case of the brand Zeta, the percentage correctly classified is 90%, and the incremental percentage correctly classified is 8%.

As Table 4 shows, the parent brand experience variable (EXP) is significant across all three extensions at the 1% risk level, which is consistent with expectations. The odds ratio for this loyalty variable is 1.932 for the brand Alpha extension,[13] 1.800 for the brand Gamma, and 6.752 for the brand Zeta. The other two variables, deal proneness and

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[13] In addition to loyalty, another aspect of parent brand experience is the time-varying nature of parent brand preference. Consistent with Bucklin and Lattin (1991), we created the last brand bought in the parent category before extension introduction as an alternative parent brand experience measure. We created a dummy variable labeled LP, which takes on a value of 1 if a household's last purchase in the parent category before extension introduction was the parent brand and a value of 0 otherwise. The trial and repeat models, which we estimated incorporating the LP (last purchase dummy variable) instead of the EXP variable, yielded similar results.

TABLE 4
Impact of Parent Brand Experience on Extension Trial and Repeat

	Extension Trial Model			Extension Repeat Model		
Variable	**Alpha**	**Gamma**	**Zeta**	**Alpha**	**Gamma**	**Zeta**
INTERCEPT	–1.650*	–1.910*	–3.694	–.376	–1.362	–1.029
	(.141)	(.094)	(.113)	(.263)	(.204)	(.169)
Parent brand experience	.659*	.588*	1.910*	.524	.395	–.491
(EXP)	**1.932**	**1.800**	**6.752**	**1.688**	**1.484**	**.612**
	(.294)	(.205)	(.267)	(.555)	(.204)	(.818)
Deal proneness	1.078*	.420*	2.465*	–.211	.194	.048
(DPRONE)	**2.938**	**1.522**	**11.762**	**.810**	**1.215**	**1.049**
	(.241)	(.099)	(.204)	(.348)	(.422)	(.389)
Total category experience	.034*	.108*	.138*	.032	.092*	.183*
(TOTCAT)	**1.034**	**1.114**	**1.148**	**1.033**	**1.097**	1.201
	(.017)	(.010)	(.011)	(.030)	(.017)	(.065)
Sample size						
Total	995	2428	4496	218	573	382
Triers	233	635	447	101	217	125
Percentage correct	77%	75%	90%	52%	65%	69%
Proportional chance	65%	62%	82%	50%	52%	66%
–2 Log L χ^2	27.861	149.09	338.829	2.489	36.675	8.737
	(p = .000)	(p = .000)	(p = .000)	(p = .477)	(p = .000)	(p = .033)

*Significant at the $p < .01$ level.

Notes: Figures in boldface represent the odds ratio; figures in parentheses represent standard errors.

total extension category experience, are also significant across all three extensions at the 1% level.

Repeat model. Our second hypothesis examines the impact of parent brand experience on extension repeat. To test this hypothesis, using only extension triers, we fit a logistic regression model to the data, which used the same set of independent variables as in the trial model but had extension repeat as the dependent variable. In addition, we constrained the sample to ensure that only households that purchased at least once in the extension category after trial of the extension were included in the sample. The results of the models are also presented in Table 4. The overall model is not significant in the case of the brand Alpha, and no individual variable is significant. For the Gamma and Zeta extensions, overall category experience (TOTCAT) is significant at the 1% level, and the corresponding overall models are significant. Most important, in all three cases, the parent brand experience variable is not statistically significant. In other words, as expected, parent brand experience does not affect repeat purchasing of a brand extension.

Summary and discussion. For brand Alpha, extension trial positively affected the propensity to buy the parent brand among both prior nonloyal users and prior nonusers. For brand Zeta, the analysis was restricted to prior users and supports a positive reciprocal effect of extension trial. In the case of the brand Gamma, no support for the hypothesized reciprocal effect of extension trial is observed among either prior users or nonusers. The analyses also strongly support the positive impact of parent brand experience on extension trial but not on extension repeat across all three extensions. Therefore, from Study 1, we conclude the following:

- There can be positive reciprocal effects of extension trial on parent brand choice among both prior users and prior nonusers.
- Reciprocal effects of extension trial can result in market share increases for the parent brand, especially among prior nonusers of a brand.
- Parent brand experience has a significant impact on extension trial.
- Parent brand experience does not have an impact on extension repeat.

The lack of reciprocal effects in the case of the Gamma extension indicates the existence of factors that moderate reciprocal effects. Previous research suggests that perceived fit, category similarity between the parent and extension brands (e.g., Aaker and Keller 1990), and relevance of the parent brand associations in the extension category (e.g., Broniarczyk and Alba 1994) moderate cross-category effects. To investigate the role of category similarity and brand association relevance in this study, a survey of student consumers was undertaken for the three extensions used in this study. The measures used in the survey included (1) perceived similarity between parent and extension categories, (2) the relevance of parent brand associations in the extension category, and (3) overall perceived fit. Subjects (n = 54) were asked to provide ratings of category similarity, overall perceived fit, and relevance of parent brand associations for the extensions used in this study.

The results reported in Table 5 show that the average ratings of overall perceived fit and extension association relevance for the three brands vary little (between 6.06 and 6.34 and between 2.32 and 2.63, respectively). However, as Table 5 shows, category similarity for the Gamma extension is far lower than the category similarity ratings for the other two extensions. The lower category similarity may account for the lack of significant reciprocal effects in the Gamma extension.

Another possible explanation for the lack of significant reciprocal effects in the case of the Gamma extension may be the nature of the parent category. This category is characterized by low interpurchase times, a relatively large number of brands (see Table 1), and a great deal of impulse buying. Therefore, it is possible that, in this category, market share increases are obtained by short-term promotional activities rather than by long-term investments in brand-building activities, so that brand extensions are unlikely to produce reciprocal effects for the parent brand. We examine each of these alternative explanations in Study 2.

Study 2

Two factors may contribute to the lack of reciprocal effects in the case of the Gamma extension: relatively low category similarity between the parent and extension categories and the unique nature of the parent category. One way to rule out the category itself as the explanation for the lack of reciprocal effects would be to demonstrate that other extensions of the same parent brand generate reciprocal effects. Also, greater evidence for the role of category similarity in moderating reciprocal effects is necessary to substantiate the argument that category similarity may have contributed to the previous result regarding the Gamma extension.

The need to control for differences in parent brand and category characteristics made it important for us to focus on other extensions introduced by the same parent brand at various levels of category similarity to the parent brand. This also enables us to gain further insights into the role of category similarity as a moderator of reciprocal effects. The Gamma brand introduced two additional brand extensions within three years of introducing the first extension.[14] Both extensions, introduced within one year of each other, were reasonably successful, in that they had gained noticeable market share in their extension categories by the end of the first year after introduction.

A second survey of student subjects (n = 55), incorporating the same measures of fit, relevance, and similarity as described in Table 5, was conducted. Subjects were asked to rate the original Gamma extension (Gamma 1) and the two later extensions (Gamma 2 and Gamma 3) on these measures. As shown in Table 6, the Gamma 2 extension category is perceived as more similar to the parent category than the original Gamma extension but does not reach the similarity levels of Alpha and Zeta. In contrast, the Gamma 3 extension category is perceived as less similar to the parent brand than the original Gamma extension. Therefore, if category similarity is a moderator of reciprocal effects, Gamma 2 is more likely than Gamma 3 to produce positive reciprocal effects. The ratings for the Gamma 1 extension were not significantly different from the ratings provided by subjects in

TABLE 5
Survey of Perceived Fit: Study 1

	Alpha	Gamma	Zeta
Category similarity	4.75[a] (1.25)[b]	2.81 (1.36)	4.47 (1.64)
Relevance of key parent brand association to extension[c]	2.39 (1.81)	2.63 (2.07)	2.32 (2.04)
Overall perceived fit	6.34 (.98)	6.06 (1.06)	6.06 (.97)

t-Tests

	Alpha Versus Gamma	Gamma Versus Zeta	Alpha Versus Zeta
Category similarity	$p < .01$	$p < .01$	$p = .10$
Association relevance	$p > .10$	$p < .05$	$p > .10$
Overall perceived fit	$p < .05$	$p > .10$	$p < .10$

[a]Numbers represent means.
[b]Numbers represent standard deviations.
[c]Subjects were asked to name the first parent brand associations that came to mind and rate the relevance of the first three associations in the extension category. The most commonly mentioned association across consumers was used in the calculation of extension association relevance Extension association relevance is reverse-coded, where 1 = "very relevant" and 7 = "very irrelevant."

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[14] No other brand extensions of the Gamma brand were introduced in the three-year time period separating the introduction of these extensions.

TABLE 6
Survey of Perceived Fit: Study 2

	Gamma 1	Gamma 2	Gamma 3	t-Test (Gamma 2 Versus Gamma 3)
Category similarity	2.91[a] (1.33)[b]	3.77 (1.51)	2.08 (1.34)	$p < .01$
Relevance of key parent brand association to extension[c]	2.51 (2.18)	3.66 (1.65)	4.53 (2.01)	$p < .05$
Overall perceived fit	6.14 (.84)	4.92 (1.49)	4.38 (1.66)	$p < .01$

[a] Numbers represent means.
[b] Numbers represent standard deviations.
[c] Subjects were asked to name the first parent brand associations that came to mind and rate the relevance of the first three associations in the extension category. The most commonly mentioned association across consumers was used in the calculation of extension association relevance. Extension association relevance is reverse-coded, where 1 = "very relevant" and 7 = "very irrelevant."

the previous survey, which thus makes comparisons across surveys seem reasonable.

Scanner panel data, analogous to the data in Study 1, were obtained from ACNielsen for the two additional Gamma extensions and analyzed as in Study 1. The results for the reciprocal effects of extension trial across prior users (with a loyalty less than .8) and prior nonusers are presented in Table 7. The Gamma 2 extension (which has a relatively high level of category similarity) has a significant, positive reciprocal effect among both prior users and prior nonusers of the parent brand. A significant reciprocal effect of the Gamma 3 extension (which has a relatively low category similarity) is observed, but only among prior nonusers of the parent brand.[15] Furthermore, the odds ratio (1.362) associated with this effect among prior nonusers is considerably smaller than the analogous odds ratio for Gamma 2 (1.771), suggesting that the reciprocal effect is weaker among prior nonusers for the Gamma 3 extension than for the Gamma 2 extension.

Study 2 provides evidence of the role of category similarity in moderating reciprocal effects and eliminates brand Gamma's parent category characteristics as a possible reason for the lack of reciprocal effects observed in the Gamma extension of Study 1. By controlling for differences in parent brand characteristics, we show that a low category similarity between the parent and extension categories may hinder the transfer of brand equity, particularly among prior users of the parent brand.[16] In summary, Study 2 suggests the following:

- The potential for positive reciprocal effects is enhanced by a high degree of category similarity between the parent and extension brands.

Although we observe the existence of positive reciprocal effects across various extensions in Studies 1 and 2, it is clear that not all brand extensions produce such positive effects. It is of interest to identify the boundaries to the existence of positive reciprocal effects. Can conditions be identified under which positive reciprocal effects do not exist? Can there be negative reciprocal effects, and what situations lead to such a scenario? We investigate these issues in Study 3.

Study 3

Loken and Roedder-John (1993) find that unsuccessful brand extensions can dilute the parent brand names by diminishing the favorable attribute beliefs that consumers have learned to associate with the family brand name. Whereas Loken and Roedder-John's (1993) study indicates that specific attribute beliefs are diluted, Keller and Aaker (1992) show that there is no negative reciprocal effect in terms of overall attitude as a result of unsuccessful brand extensions. However, Keller and Sood (2000) find evidence of negative reciprocal effects in an experimental setting. These effects were evident when consumers had an unfavorable product experience with a similar brand extension. The suggestion that problems related to extension performance may lead to negative reciprocal effects has been echoed by Sullivan (1990). Her findings suggest that performance-related problems may result in negative reciprocal effects in umbrella-branded products. In Study 3, we investigate the hypothesis that trial of an unsuccessful extension can decrease the likelihood of purchasing the parent brand among prior users of the parent brand.

Scanner panel data similar to the data used in Studies 1 and 2 were obtained on a failed extension, Eta, which was withdrawn from the market approximately 18 months after its introduction.[17] The parent brand is a well-known food

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[15] A prior nonuser of the Gamma parent brand may have tried the previous brand extension (in Study 1). Therefore, it was necessary to ensure that a prior nonuser of the Gamma parent brand was also a nonuser of the first extension. We checked to ensure that prior nonusers of the Gamma extension were also nonusers of the Gamma 1 extension.

[16] In addition, to confirm the existence of forward transfer effects—that is, the impact of parent brand experience on extension trial but not on repeat—trial and repeat models similar to the ones described previously and in Table 4 were estimated for Gamma 2 and Gamma 3. The results confirm the findings from Study 1. Parent brand experience had a significant impact on extension trial but not on repeat in both the Gamma 2 and Gamma 3 cases

[17] The extension failure was chosen by scanning wire service reports and LEXIS-NEXIS announcements and selecting a recent example of a product that was withdrawn from the marketplace.

TABLE 7
Reciprocal Impact of Extension Trial on Parent Brand Choice: Study 2

	Prior Users		Prior Nonusers	
Variable	Gamma 2 High Similarity	Gamma 3 Low Similarity	Gamma 2 High Similarity	Gamma 3 Low Similarity
Constant	–1.092* (.051)	–2.050 (.096)	–1.152* (.099)	–2.619* (.153)
Parent brand experience (EXP)	2.775* **16.051** (.050)	2.396* **10.983** (.068)	—	—
Relative price (RELPRI)	–.883* **.439** (.034)	–.025 **.975** (.066)	–.862* **.422** (.068)	–.273* **1.314** (.108)
Reciprocal effects indicator (IND)	.150* **1.163** (.024)	.052 **1.053** (.032)	.571* **1.771** (.063)	.309* **1.362** (.060)
Advertisements (AD)	.082* **1.086** (.025)	–.102 **.902** (.060)	.073 **1.076** (.049)	.100 **1.106** (.081)
Displays (DISP)	.097* **.907** (.024)	.117* **1.124** (.046)	–.009 **.991** (.046)	.036 **1.036** (.074)
Sample size Choice	120,616 19,822	45,747 9169	52,732 4541	29,611 2965
–2 Log L χ^2	3612.540 $(p = .000)$	1231.822 $(p = .000)$	249.783 $(p = .000)$	33.123 $(p = .000)$
Percentage correctly classified	86%	80%	91%	90%
Proportional chance	72%	68%	84%	82%

*Significant at the $p <$ 01 level.

Notes Figures in boldface represent the odds ratio; figures in parentheses represent standard errors.

brand and has been in existence for several years. The parent brand is a market leader with a 53% market share in the time period prior to the introduction of a food extension in a category that was perceived as dissimilar to the parent brand category and as low in overall fit (ratings of 1.92 and 3.11, respectively).

The data were analyzed in a manner similar to the analyses of Studies 1 and 2. The results are presented in Table 8. As can be seen, the reciprocal effects indicator (IND) has a significant, negative coefficient, and this coefficient is not significant among nonusers. This suggests that there are negative reciprocal effects of extension trial on the parent brand among prior users. This study shows that a failed extension (where failure is defined as the extreme situation when a brand is eventually withdrawn from the market) may cause negative reciprocal effects among prior users of the parent brand. In summary, Study 3 suggests the following:

- An unsuccessful extension can produce negative reciprocal effects among prior users of the parent brand, even when the extension category has relatively low similarity to the parent category

Discussion

Summary

Our findings indicate that positive reciprocal effects of extension trial exist, particularly among nonloyal users and among prior nonusers of the parent brand. These positive reciprocal effects also appear to translate into market share increases. In our research, we show that category similarity appears to moderate the existence and magnitude of positive reciprocal effects. In addition, negative reciprocal effects of unsuccessful extensions exist among prior users of the parent brand. A summary of the findings from the various studies is presented in Figure 2.

The findings from this research are generally consistent with previous findings based on experimental data (e.g., Gurhan-Canli and Maheswaran 1998; Keller and Aaker 1992; Roedder-John, Loken, and Joiner 1998). Building on previous research by Keller and Aaker (1992), our research shows the existence of positive reciprocal effects in terms of parent brand choice associated with successful extensions and examines the role of prior parent brand experience as a moderator of recip-

TABLE 8
Reciprocal Impact of Extension Failure on Parent Brand Choice: Study 3

Variable	Eta Failed Extension Prior Users	 Prior Nonusers
Constant	−1.362* (.338)	−2.287* (.775)
Parent brand experience (EXP)	2.207* **9.085** (.194)	—
Relative price (RELPRI)	−.078 **.926** (.090)	.238 **1.269** (.214)
Reciprocal effects indicator (IND)	−.453* **.636** (.099)	−.171 **.842** (.241)
Advertisements (AD)	.435* **1.546** (.152)	.444 **1.560** (.377)
Displays (DISP)	.998* **2.713** (.217)	.608 **1.836** (.589)
Sample size	3604	979
Choice	1303	189
−2 Log L χ^2	216.240 ($p < .000$)	4.402 ($p = .354$)
Percentage correctly classified	65%	82%
Proportional chance	54%	69%

*Significant at the $p < .01$ level.

Notes: Figures in boldface represent the odds ratio; figures in parentheses represent standard errors.

rocal effects. The previously overlooked role of parent brand experience as a moderator of reciprocal effects suggests a possible explanation for mixed findings regarding positive reciprocal effects in prior research that has used attitudinal data.

Previous studies, such as Gurhan-Canli and Maheswaran's (1998), Loken and Roedder-John's (1993), and Roedder-John, Loken, and Joiner's (1998), provide evidence of the existence of negative reciprocal effects at the attribute level. We find evidence of negative reciprocal effects of extension failure on parent brand choice among prior users of the parent brand. Among prior nonusers, no negative reciprocal effects were apparent because of these consumers' low prior probability of purchasing the parent brand. Establishing the potential for negative reciprocal effects in a behavioral setting contributes to our knowledge regarding the impact of a failed extension on consumer choice behavior.

This research contributes to the extant knowledge regarding category similarity as a moderator of positive reciprocal effects by examining its role in a real-world setting. Consistent with previous findings in lab settings (Gurhan-Canli and Maheswaran 1998; Keller and Aaker 1992), we find evidence of a positive association between the magnitude of a positive reciprocal effect and the degree of similarity between the extension and parent categories. However, category similarity did not appear to matter as much in the context of negative reciprocal effects. Further research should focus on the differential role of category similarity in the case of successful versus unsuccessful extensions.

Previous research has shown that buyers who lack information regarding product quality tend to use brands as indicators of product quality (Rao, Qu, and Ruekert 1999). Therefore, our findings regarding the impact of experience with the parent brand on extension trial are not unexpected. However, scant research exists that examines the role played by parent brand experience on extension repeat purchases. Our findings provide evidence that the role of parent brand experience in the evaluation of a brand extension diminishes after trial. This finding has implications for researchers who support the existence of confirmatory biases that may operate and prevent a product from being judged on its own merit. However, our findings may be confined to frequently

FIGURE 2
Testing a Framework of Positive and Negative Reciprocal Effects: A Summary of Findings

		Category Similarity			
		High		Low	
Brand Extension	Successful	Prior Nonloyal Users of Parent Brand Positive *Confirmed in Studies 1 and 2*	Prior Nonusers of Parent Brand Positive *Confirmed in Studies 1 and 2*	Prior Nonloyal Users of Parent Brand No effect *Confirmed in Studies 1 and 2*	Prior Nonusers of Parent Brand No effect *Confirmed in Study 1*
	Unsuccessful	Prior Users of Parent Brand Negative	Prior Nonusers of Parent Brand No effect	Prior Users of Parent Brand Negative *Confirmed in Study 3*	Prior Nonusers of Parent Brand No effect *Confirmed in Study 3*

purchased packaged goods for which product trial may be sufficient to gain complete information regarding quality. Further research incorporating experience or credence goods will enhance the understanding of the role of parent brand experience in influencing repeat purchases.

Managerial Implications

Brand managers need to consider potential reciprocal effects in assessing the benefits of extension introduction. The role of brand extensions in enhancing the appeal of the parent brand among prior nonusers of the parent brand has been overlooked as an important added benefit of the extension strategy.

The introduction of a brand extension also has associated risks. The failure of a brand extension can harm brand equity by producing negative reciprocal effects. Contrary to what was believed previously, this appears to be the case even when the extension is introduced in a category with relatively little similarity to the parent category.

That parent brand experience had an impact on extension trial but not on repeat purchases suggests that the extension strategy may be used primarily to reduce the initial expenditures associated with product introduction. However, parent brand experience appears to have little impact on long-term repeat purchasing of an extension across a range of cases in which perceived similarity between the parent and extension categories varied considerably.

Limitations and Further Research

Reciprocal effects have been investigated in this article entirely in the context of purchase behavior. One way to strengthen the findings would be to support the purchase behavior data with attitudinal data. In addition, no data involving a highly similar extension that failed in the market were available. Cases of this nature will strengthen our framework.

Another issue that we do not address is the similarity of the target market for the parent and extension brands and the role of target market similarity versus category fit in influencing the transfer of associations from parent to extension categories. In other words, it is possible that reciprocal effects may exist, even in the absence of category similarity, if the target audience for the parent and extension products is similar. Although we have not addressed this in the current study, this is a promising avenue for further research.[18]

The potentially moderating roles played by factors such as extension category loyalty in the direct transfer of parent brand experience to the extension category are not examined in this research. Further research should examine the factors that may moderate the impact of parent brand experience on extension trial and should assess the validity of the findings across various categories, such as services or technical products.

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[18] We thank a reviewer for this insight.

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The Impact of Category Management on Retailer Prices and Performance: Theory and Evidence

Category management (CM) is a recent retail management initiative that aims at improving a retailer's overall performance in a product category through more coordinated buying, merchandising, and pricing of the brands in the category than in the past. Despite tremendous retailer and manufacturer interest in the process of CM and its rapid adoption in the industry, much uncertainty exists about the consequences of CM for channel members. The present study focuses on how a shift to CM by a retailer affects its equilibrium prices, sales, and profitability in a competitive retail setting. On the basis of an analysis of a model of two competing national brand manufacturers that supply two competing common retailers, the authors find that one retailer's adoption of CM increases its average unit price of the category and reduces its sales volume and revenues. However, this retailer can still enjoy an increase in its gross margin profits as competing manufacturers' wholesale prices fall in the process. Also, the CM adopter's profits are greater than those of a symmetric competing retailer that follows the traditional brand-centered management of a product category when the interbrand competition is high but interstore competition is low. Applying the intervention analysis methodology, the authors empirically test several of these analytical findings, employing a unique data set that contains information about a supermarket chain's weekly average unit prices and sales of the laundry detergent category before and after this product category was moved to CM by the retailer. The propositions that adoption of CM will lead to higher retail prices and lower sales are upheld in this empirical study. The authors discuss the implications of these findings for practitioners and researchers, the limitations of the study, and directions for further research.

A fundamental change is taking place in the retail grocery and drug store industries as retailers and manufacturers begin to embrace a process called category management (CM). Traditionally, retailers assigned buyers to purchase brands of specific manufacturers, instead of making all purchases within a particular product category. Individual brand-oriented buyers sought to improve their economic performance by procuring large quantities of product on deals and then relying on retail pricing, promotions, and merchandising activities to deplete brand-level inventories as quickly as possible. In contrast, CM recognizes the interrelatedness of products in the category and focuses on improving the performance of whole product categories rather than the performance of individual brands. Under CM, traditional brand (vendor)-oriented buyers are replaced with category managers who are responsible for integrating procurement, pricing, and merchandising of all brands in a category and jointly developing and implementing category-based plans with manufacturers to enhance the outcomes of both parties (Pellet 1994; *Progressive Grocer* 1995a, b; *Supermarket News* 1997).

Retailer interest in CM is high. For example, according to one recent industry report, 83% of grocery retailers surveyed view CM as the most important issue facing them (*Progressive Grocer* 1996), and another study shows CM initiatives to be the most important reason that retailers are improving their information technology systems (*Chain Drug Review* 1997). Despite the interest in CM and its rapid adoption in the industry (ACNielsen 1998), however, much uncertainty exists about the consequences of CM for retailers, manufacturers, and consumers. For example, beyond anecdotal reports, few studies have rigorously investigated how a retailer shift from brand-centered management (BCM) to CM affects retail prices or retailer and manufacturer profits as its proponents maintain (Harris and McPartland 1993; *Category Management Report* 1995). The objective of the present research is to investigate the impact of a retailer's shift from BCM to CM on retail and wholesale prices, sales, and profits in a competitive decentralized channel setting. Adoption of CM results in many changes in the retailer's operations and management. We restrict our inquiry to pricing decisions and their outcomes, however, because one of the key benefits of CM is a more profitable pricing structure (ACNielsen 1998; *Category Management Report* 1995; McLaughlin and Hawkes 1994). Examining pricing under CM is important because changes in the retailer's approach to pricing can directly affect manufactur-

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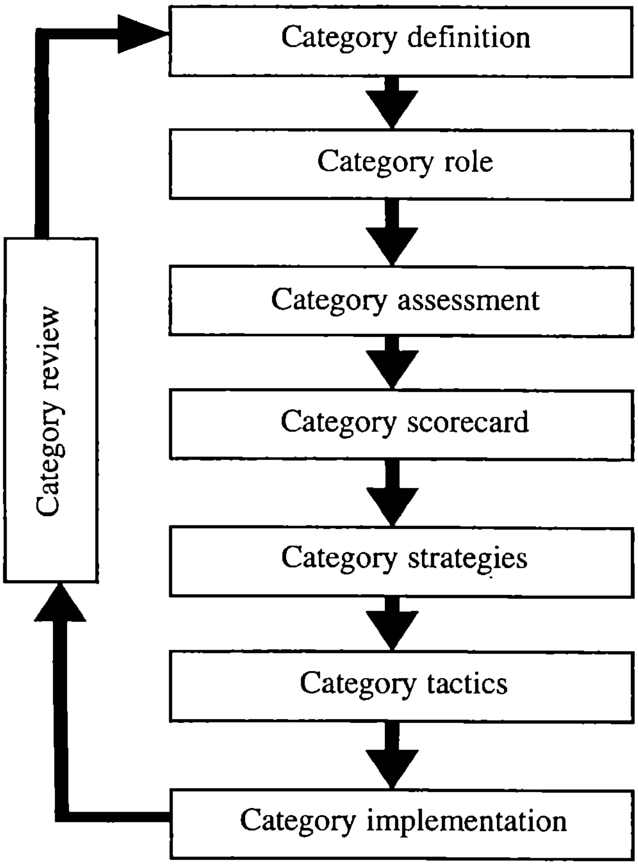
ers, competing retailers, and consumers, who are believed to benefit from CM adoption.

For the purpose of this study, CM is defined as a situation in which a category manager jointly sets the prices of all brands in the category so as to maximize total category profits. Traditional BCM of a category is defined as a situation in which each brand's retail price is set independently so as to maximize its own profit contribution and the prices of competing brands in the category are taken as given. These definitions are consistent with the basic notion that CM involves more coordinated management of brands in a category, including price setting, than in the past (*Category Management Report* 1995; Food Marketing Institute 1995). We recognize that in practice, some level of coordinated price setting takes place under BCM. Clearly, CM calls for a high level of price coordination, which is the phenomenon examined in the present research. In this study, we first lay out the strategic approach that surrounds the CM business process. On the basis of this discussion, we analyze how a retailer's shift from BCM to CM alters equilibrium prices, sales, and profits within the context of a model of a two-level (competing national brand manufacturers/competing common retailers) channel system. More specifically, we derive and compare equilibrium retailer prices, sales, and profits as functions of demand function parameters in a category composed of two national brands sold by two competing common retailers. Comparisons of prices, sales, and profits are made under three commonly occurring scenarios: (1) Both retailers practice BCM, (2) one retailer practices CM and the other employs BCM, and (3) both retailers practice CM. The comparative analyses produce several propositions about how the adoption of CM by one retailer affects its prices, sales, and profitability compared with a competitor that stays with BCM or might also shift to CM. Several interesting implications of the retailer's adoption of CM for the manufacturers and consumers in the channel also emerge from this investigation.

FIGURE 1
The Category Management Process



We test the implications of the key analytical propositions using store-level scanner data in the laundry detergent category obtained from Information Resources Inc. The database contains information on average prices, sales volumes, and revenues of brands in this category collected from 21 stores that are affiliated with a large supermarket chain over a three-year period, January 1993 to December 1995. These 21 stores are all located in one major Midwestern metropolitan market. The supermarket chain switched the laundry detergent category from BCM to CM in February 1994, allowing an examination of the category before and during CM. Information about the average prices and sales for competitors to the chain who did not switch to CM are also contained in the database, providing researchers and practitioners with a rare look at CM effects for the retailer and its suppliers, competitors, and patrons.

The Strategic Framework for CM and Theoretical Analysis

CM Framework

In 1995, the Category Management Subcommittee of the ECR Best Practices Operating Committee and the Partnering Group Inc. published an important study: *Category Management Report: Enhancing Consumer Value in the Grocery Industry*. This report is basically the how-to of CM and lays out eight critical steps that are necessary for a proper implementation of CM by a retailer. The basic steps in the CM process are outlined in Figure 1. It is important to understand the strategic structure and process surrounding CM to evaluate the outcomes of its implementation effectively.

Step 1: category definition. This is the first step in the category planning process. This step determines the products that constitute a category, subcategory, and major segmentation. The category definition should include all products that are either highly substitutable or closely related, subject to operational constraints.

Step 2: category role. This step assigns the category role (purpose) based on a cross-category analysis that considers the consumer, distributor, supplier, and marketplace. Designating a role also helps the retailer allocate resources among various categories.

Step 3: category assessment. This step involves gathering and analyzing historical data and relevant information and then developing insights for managing the category.

Step 4: category scorecard. In this step, performance measures are established to evaluate program execution, including target gross margins, return on inventory goals, service levels, and so forth.

Step 5: category strategies. Typical category strategies include cash generating, excitement creating, profit generating, traffic building, and so forth. For example, a traffic-building strategy is focused on drawing consumer traffic to the store and into the aisle, and a profit-generating strategy seeks to increase category gross margin percentage and gross profit dollar.

Step 6: category tactics. This step involves the determination of optimal category pricing, promotion, assortment, and shelf management that are necessary to achieve the agreed-on role, scorecard, and strategies. "Pricing policies should be applied to the current prices to develop *price changes* and set overall price changes for the category. Promotional policies should be applied in the development of a promotional plan that includes frequency of promotions and recommended price points" (*Category Management Report* 1995, p. 45).

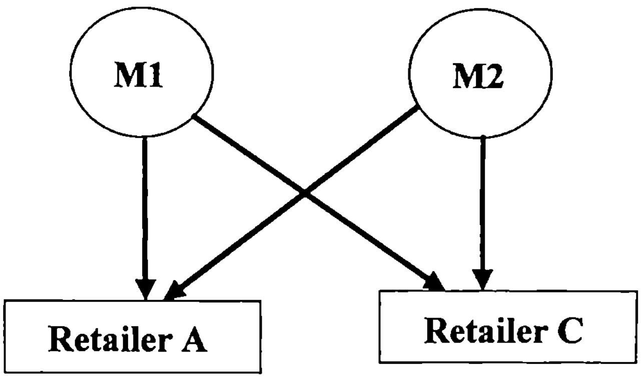
Step 7: plan implementation. An implementation plan generally includes what specific tasks are to be done, when each task should be completed, and who is to accomplish each task. The plan should also note the start date of each task.

Step 8: category review. This step involves the regular management of the intended results of the overall plan. Reviews should be scheduled at established intervals and listed in the implementation plan.

An inspection of the CM framework reveals that once the category definition (Step 1) and the category role (Step 2) are chosen, the bulk of the action lies in determining the category strategy (Step 5) and then executing the specific category tactics (Step 6). Although different strategies may be appropriate for different categories, retailers predominantly practice CM to increase profits and sales. As ACNielsen (1998, p. 5) notes in its *Eighth Annual Survey of Trade Promotion Practices*, "Retailers practice category management with several ends in mind, but increasing profitability, increasing revenue and optimizing item mix are ... the most important motivators." For example, 97% of retailers surveyed indicated that the top priority for practicing CM is increased profitability. Similarly, the retailer examined in this study employed a variety of strategies, including a profit-generating strategy, consistent with CM. For modeling purposes, we assume that the retailer sought to build profits by CM.

We use the components of the strategic framework of CM to develop and analyze a model of a decentralized distribution channel that consists of two competing retailers, Retailers A and C, each carrying two differentiated national brands that are produced by competing manufacturers M1 and M2, as shown in Figure 2.

FIGURE 2
The Competitive Retail Structure



Theoretical Analysis

Note that most trading areas are more complex than the one shown in Figure 2 and are composed of multiple retailers (e.g., Winn-Dixie, Kroger, Safeway, Albertson's) that sell multiple brands in a product category, which are produced by multiple manufacturers. However, replacing the 2 × 1 × 2 structure (2 manufacturers, each produces 1 brand, 2 retailers) with a more complex structure (e.g., a 2 × 3 × 2 structure) would not change the substantive nature of the results from the present modeling framework. Because the benefits of greater realism in the form of more manufacturers and brands are outweighed by the costs of a more analytically complex model that does not alter our predictions about the effects of retailer adoption of CM, we opted for a simpler structure. The study focuses on the demand-side implications of a retailer's shift from BCM to CM. In keeping with this thrust, we assume that the manufacturers are symmetric with respect to their costs of production and that the manufacturers' marginal costs of production are constant; for ease of exposition, manufacturers' marginal costs of production are set equal to zero. We also assume that the manufacturers sell their brands to the retailers at a constant per-unit charge (i.e., the wholesale price) and the retailers incur no other costs of acquisition. Last, we assume that each manufacturer sells its brand at the same wholesale price to each retailer. This is in keeping with legal restrictions against discriminatory price discounts by manufacturers that exist in practice (see, e.g., Ingene and Parry 1995; Kotler and Armstrong 1996, p. 88).

Our investigation employs the traditional game-theoretic approach to analyzing problems of channel price coordination and competition (e.g., Choi 1991; Coughlan and Wernerfelt 1989; Ingene and Parry 1995; Jeuland and Shugan 1983; McGuire and Staelin 1983; Raju, Sethuraman, and Dhar 1995; Trivedi 1998; Zenor 1994). As do many previous researchers who model decentralized channels in this stream of literature, we assume, first, that each manufacturer determines the wholesale prices to maximize its profits. Given these wholesale prices, managers at the two retailers decide on the retail prices to maximize their respective objective functions. The manufacturers know each retailer's pricing decision rule and take these into account when setting their wholesale prices. That is, we assume that the interaction between the firms is such that each manufacturer acts as a Stackelberg leader in setting its wholesale price, and the retailers follow with their retail price decisions. Adopting a manufacturer–Stackelberg rather than retailer–Stackelberg perspective is reasonable, because no store brands are involved in our analysis. Second, we assume that the retailers face symmetric brand-level demand functions that are linear in the brands' prices. More specifically, we denote the quantities of manufacturer's brand, k (k = 1, 2), demanded at retailers j (j = A, C) by q_{jk}, respectively. Then we specify the corresponding demand functions as follows:

$$(1)\quad q_{A1} = \frac{1}{4}[1 - p_{A1} + \eta(p_{A2} - p_{A1}) + \gamma(p_{C1} - p_{A1})],$$

$$(2)\quad q_{A2} = \frac{1}{4}[1 - p_{A2} + \eta(p_{A1} - p_{A2}) + \gamma(p_{C2} - p_{A2})],$$

$$(3)\quad q_{C1} = \frac{1}{4}[1 - p_{C1} + \eta(p_{C2} - p_{C1}) + \gamma(p_{A1} - p_{C1})], \text{ and}$$

$$(4)\quad q_{C2} = \frac{1}{4}[1 - p_{C2} + \eta(p_{C1} - p_{C2}) + \gamma(p_{A2} - p_{C2})],$$

where the demand function parameters $\eta \in [0,1)$ and $\gamma \in [0,1)$, respectively, denote the interbrand cross-price sensitivity (degree of product differentiation) and the interstore cross-price sensitivity (degree of store differentiation), and p_{jk} is the price of brand k (k = 1, 2) at retailer j (j = A, C). Thus, the quantities of brand k demanded at retailer/store j are directly affected by the brand's own price at store j, the difference between the two competing brands' prices at store j, and the difference between the brand's price at store j and its price at the competing store. A value of η close to zero implies that the two national brands are highly differentiated, whereas $\eta \rightarrow 1$ implies that the brands are highly substitutable. Similarly, as γ increases from zero to one, demand for a brand at one retailer is increasingly influenced by its price at the other retailer; that is, store competition for consumers is more intense. Last, note that aggregate demand in the product category at zero prices for the brands is scaled to 1.

Previous models of decentralized channel price competition involving a common retailer (i.e., an independent retailer carrying brands of different manufacturers) that faces a linear demand function structure include those of Choi (1991, 1996), Zenor (1994), Raju, Sethuraman, and Dhar (1995), and Trivedi (1998). Among these authors, only Choi (1996) and Trivedi (1998) analyze a duopoly common retailer model similar to ours. However, the focus of these authors is to compare the effects of varying channel power relationships on profits and prices, assuming that both retailers are natural category managers. In contrast, our focus is the competitive effects of a retailer's move from BCM to CM, and we derive and compare equilibrium prices, sales, and profits for the following three retail competitive scenarios: (1) The BCM–BCM scenario, in which both retailers practice BCM; (2) the CM–BCM scenario, in which one retailer (Retailer A) shifts to CM and the other (Retailer C) stays with BCM; and (3) the CM–CM scenario, in which both retailers adopt CM. None of these scenarios in a two-level duopoly channel structure has been previously analyzed in the literature. Indeed, only Zenor (1994) has focused on CM issues. However, Zenor concentrates on the pricing and profit benefits of CM by competing multibrand manufacturers marketing to a monopolistic retailer. In contrast, our analysis focuses on the effects of the adoption of CM by a retailer in a competitive retail setting. We now describe the three scenarios that will generate the propositions that we subsequently subject to empirical testing.

Analysis of the BCM–BCM scenario. In this scenario, we assume that each retailer has separate managers for procuring and pricing the two manufacturers' brands. Considering the known wholesale prices, w_i, i = 1, 2, of each brand, each of these managers sets price so as to maximize own-brand profits, taking the price of the other brand at the same store as well as the two brands' prices at the competing retailer as fixed. Thus, the objective functions of the two buyers at Retailer A are, respectively, $\text{Max}(p_{A1}^{BCM} - w_1^{BCM})q_{A1}^{BCM}$ w.r.t. p_{A1}^{BCM} and $\text{Max}(p_{A2}^{BCM} - w_2^{BCM})q_{A2}^{BCM}$ w.r.t. p_{A2}^{BCM}. Similarly, the objective functions of the two buyers at Retailer C are $\text{Max}(p_{C1}^{BCM} - w_1^{BCM})q_{C1}^{BCM}$ w.r.t. p_{C1}^{BCM} and $\text{Max}(p_{C2}^{BCM} - w_2^{BCM})q_{C2}^{BCM}$ w.r.t. p_{C2}^{BCM}. Substituting the corresponding demand functions in Equations 1–4 into these objective functions and simultaneously solving the four buyers' first-order conditions for profit maximization gives us the (Nash) equilibrium retail prices, $\hat{p}_{A1}^{BCM}$, $\hat{p}_{A2}^{BCM}$, $\hat{p}_{C1}^{BCM}$, and $\hat{p}_{C2}^{BCM}$ as functions of the given wholesale prices, w_1^{BCM} and w_2^{BCM}, and parameters η and γ. Substituting these retail pricing decision rules into the demand equations, Equations 1–4, we obtain the corresponding demands $\hat{q}_{A1}^{BCM}$, $\hat{q}_{A2}^{BCM}$, $\hat{q}_{C1}^{BCM}$, and $\hat{q}_{C2}^{BCM}$ as functions of the wholesale prices w_1^{BCM} and w_2^{BCM} and the demand parameters. Then, considering the retailers' conditional pricing decision rules, Manufacturer i's (i = 1, 2) problem is to determine the wholesale price, w_1^{BCM}, that maximizes its profit. We assume that Manufacturer i does so taking the other manufacturer's wholesale price as fixed; that is, the manufacturers are themselves engaged in Nash competition. Thus Manufacturer i solves $\text{Max}\{w_1^{BCM}[\hat{q}_{A1}^{BCM}(w_1^{BCM}, w_l^{BCM}) + \hat{q}_{C1}^{BCM}(w_1^{BCM}, w_l^{BCM})]\}$ w.r.t. w_1^{BCM}, i, $l = 1, 2$, and $l \neq i$. Simultaneously solving the manufacturers' first-order conditions gives the Nash equilibrium wholesale prices, w_1^{*BCM} and w_2^{*BCM}. With these solutions in hand, it is straightforward to derive the expressions for the equilibrium retail and wholesale prices, retail demands, each retailer's total category profits, and the manufacturers' brand profits as functions of the demand parameters. The analytical results for this scenario, the CM–BCM scenario, and the CM–CM scenario may be obtained from the authors.

Analysis of the CM–BCM scenario. In a fairly common situation, one retailer adopts CM and a competitor in the same trading area remains with BCM (e.g., *Supermarket News* 1997b). More specifically, assume that Retailer A replaces its two separate national brand buyers with one category manager who jointly sets the two brands' prices so as to maximize total category profit, taking into account the announced wholesale prices and treating Retailer C's brand prices as fixed. This category manager's objective function is then $\text{Max}\{(p_{A1}^{CMBCM} - w_1^{CMBCM})q_{A1}^{CMBCM} + (p_{A2}^{CMBCM} - w_2^{CMBCM})q_{A2}^{CMBCM}\}$ w.r.t. p_{A1}^{CMBCM} and p_{A2}^{CMBCM}. In contrast, the objective functions of the two buyers of Retailer C are the same as in the previous scenario; that is, $\text{Max}(p_{C1}^{CMBCM} - w_1^{CMBCM})q_{C1}^{CMBCM}$ w.r.t. p_{C1}^{CMBCM} and $\text{Max}(p_{C2}^{CMBCM} -$

$w_2^{CMBCM})q_{C2}^{CMBCM}$ w.r.t. p_{C2}^{CMBCM}, respectively. Considering the change in Retailer A's objective function and following the same game solution approach as already described, the expressions for the equilibrium retail and wholesale prices, demands, and the retailers' and manufacturers' profits are derived.

Analysis of the CM–CM scenario. In this scenario, we assume that each retailer has a category manager who jointly sets the prices of the brands in the category so as to maximize total category profit, taking into account the announced wholesale prices and treating the competing retailer's prices as fixed. Retailer A's category manager's objective function is then $\text{Max}\{(p_{A1}^{CMCM} - w_1^{CMCM})q_{A1}^{CMCM} + (p_{A2}^{CMCM} - w_2^{CMCM})q_{A2}^{CMCM}\}$ w.r.t. p_{A1}^{CMCM} and p_{A2}^{CMCM}, and Retailer C's category manager's objective function is $\text{Max}\{(p_{C1}^{CMCM} - w_1^{CMCM})q_{C1}^{CMCM} + (p_{C2}^{CMCM} - w_2^{CMCM})q_{C2}^{CMCM}\}$ w.r.t. p_{C1}^{CMCM} and p_{C2}^{CMCM}. Following the same game solution approach as already described, the expressions for the equilibrium retail and wholesale prices, demands, and the retailers' and manufacturers' profits are derived.

Comparative Analyses

To gain insight into the results obtained in the previous scenarios, we numerically evaluate the behavior of the retailers' equilibrium prices, sales, and profits in these scenarios and the differences between them as the values of the demand function parameters η (measuring intracategory brand competition) and γ (measuring interstore brand competition) are each varied over the range [0,1). Next, we summarize our findings in the form of propositions with accompanying explanations.

Impact of CM on Category Prices

The initial set of issues examined involves the CM retailer's pricing decisions. A comparative analysis between various scenarios suggested by our model leads us to the following proposition, which deals with pricing changes within a retailer:

> P_1: All else being equal, the retail price of competing brands in a product category will increase when a retailer (Retailer A) moves the category from BCM to CM. This is true irrespective of whether the competing retailer (Retailer C) remains with BCM (i.e., the CM–BCM scenario) or shifts to CM (i.e., CM–CM scenario).

Figure 3 displays the computed difference between Retailer A's equilibrium prices in the CM–BCM and BCM–BCM scenarios at various values of η and γ in the specified range. We see that the price difference is positive everywhere. This difference in prices increases as the value of η increases and that of γ decreases. However, the retailer's prices in the two scenarios are the same when η = 0, whatever the value of γ is. The rationale for the results is that in the CM regime, Retailer A engages in coordinated or cooperative pricing of brands in the category to maximize total category profits as opposed to the competitive pricing of brands that occurs under BCM. Coordinated pricing results in higher prices. There is no difference between coordinated and competitive pricing outcomes when the brands are perfectly differentiated, that is, when their demands are independent of each other's prices ($\eta = 0$). However, when the brands are substitutable ($\eta > 0$), coordinated management has the effect of dampening this natural price competition that exists between the brands, which results in higher prices. This dampening effect becomes more significant as the brands become more substitutable, leading to larger differences between coordinated and competitive pricing outcomes as $\eta \rightarrow 1$. However, the price increase effect of within-store pricing coordination is tempered by the need to be competitive with the lower prices of the other retailer, which stays with BCM. This competitive effect becomes more pronounced as shoppers' propensity to engage in cross-store shopping increases. Thus, as interstore cross-price sensitivity γ increases, the difference between Retailer A's prices in the two scenarios diminishes. The analysis of a retailer move from BCM–BCM to CM–CM is analogous. The following proposition relates to pricing changes and comparisons across retailers:

> P_2: All else being equal, the increase in the retail price of brands in a product category moved to CM by a retailer (Retailer A) will be higher than the increase in retail price of that category at the competing retailer (Retailer C) that continues with BCM (i.e., CM–BCM scenario).

Figure 4 shows differences between the retailers' equilibrium prices within the CM–BCM scenario when values of

FIGURE 3
Difference Between Retailer A's Equilibrium Prices in CM–BCM and BCM–BCM Scenarios as a Function of Cross-Price Sensitivities

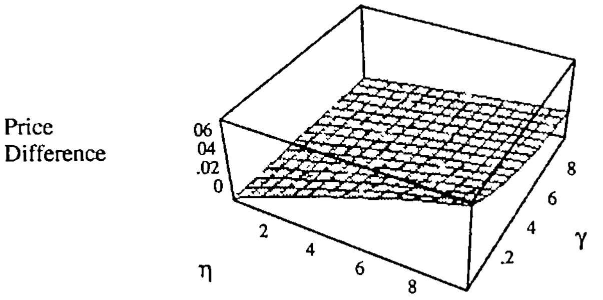
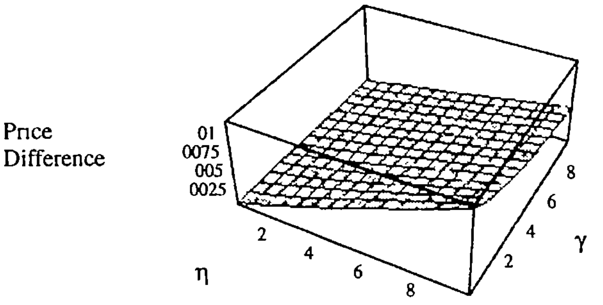


FIGURE 4
Difference Between Retailer A's and Retailer C's Equilibrium Prices in CM–BCM Scenario as a Function of Cross-Price Sensitivities



η and γ are varied. The intuition is similar to that for P_1. The retailer that sets prices so as to maximize total category profits will have a higher price level than a symmetric retailer that sets each competing brand's price so as to maximize its own profit contribution. However, although the basic economic explanation for P_1 and P_2 is fairly straightforward, the practical implications of these results are significant. Specifically, a higher average retail price in a category as a result of CM is hard to reconcile with the efficient consumer response (ECR) objective of providing higher consumer value to attract and keep customers. We return to this issue subsequently.

Impact of CM on Category Sales Volume and Revenues

Industry CM experts argue that adoption of CM should improve overall category sales for a retailer. For example, a leading trade journal (*Progressive Grocer* 1995, p. S4) states that "Category management's ultimate objective ought to be to increase total store sales." Similarly, another report (*Category Management Report* 1995, p. xvii) maintains that "Category Management represents a significant and results-proven opportunity to achieve substantial business improvements." However, as stated in the following proposition, the present analysis suggests a decline in category sales when a retailer adopts CM.

FIGURE 5
Difference Between Retailer A's Equilibrium Category Unit Sales in CM–BCM and BCM–BCM Scenarios as a Function of Cross-Price Sensitivities

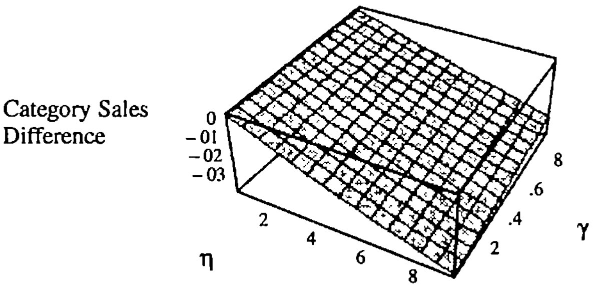
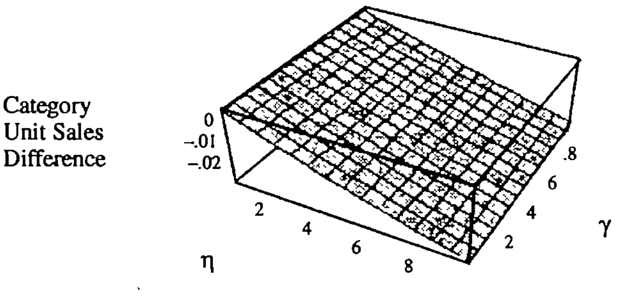


FIGURE 6
Difference Between Retailer A's and Retailer C's Equilibrium Category Unit Sales in CM–BCM Scenario as a Function of Cross-Price Sensitivities



> P_3: All else being equal, the total unit sales in a product category will decrease when a retailer (Retailer A) moves the category from BCM to CM, irrespective of whether the competing retailer (Retailer C) remains with BCM (i.e., a CM–BCM scenario) or shifts to CM (i.e., a CM–CM scenario).

Figure 5 shows the decrease in Retailer A's unit sales upon moving from BCM to CM as values of η and γ are varied. These outcomes are not surprising given the earlier observation that prices increase under CM. Note that the decline in sales is greatest when η is high and γ is low, that is, in the conditions under which Retailer A's price increase is greatest. Furthermore, a higher interstore cross-price sensitivity will temper Retailer A's price increase somewhat but not enough to prevent a loss in sales to lower-priced BCM retailers such as Retailer C in a CM–BCM scenario. Therefore, we give the next proposition, which is illustrated in Figure 6. The analysis of a retailer move from BCM–BCM to CM–CM is analogous.

> P_4. All else being equal, the total unit sales of a product category moved to CM by a retailer (Retailer A) will be lower than the total unit sales of that category at a symmetric competing retailer (Retailer C) that continues with BCM (i.e., a CM–BCM scenario).

These analytical results are consistent with the finding of a recent survey conducted in several large U.S. cities that significant numbers of shoppers have switched away from stores practicing CM (Cottrell 1995).

Next, turning to sales revenues, the analytical results lead to the following proposition (see Figure 7):

> P_5: All else being equal, the sales revenues of the category will decrease when a retailer (Retailer A) moves the category from BCM to CM, irrespective of whether the competing retailer (Retailer C) continues with BCM (i.e., a CM–BCM scenario) or shifts to CM (i.e., a CM–CM scenario)

Revenues decline because the price increase under CM by Retailer A does not compensate for the resulting reduction in consumer demand at this retailer. Next, we turn to category profits.

FIGURE 7
Difference Between Retailer A's Equilibrium Revenues in CM–BCM and BCM–BCM Scenarios as a Function of Cross-Price Sensitivities

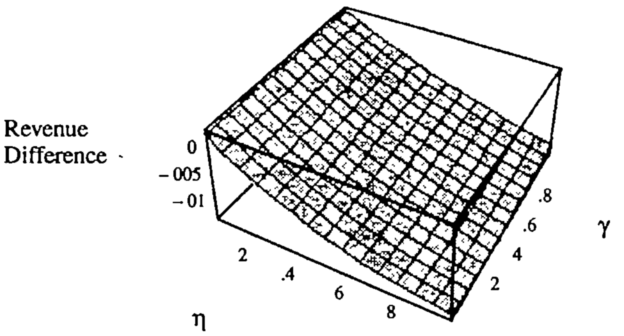
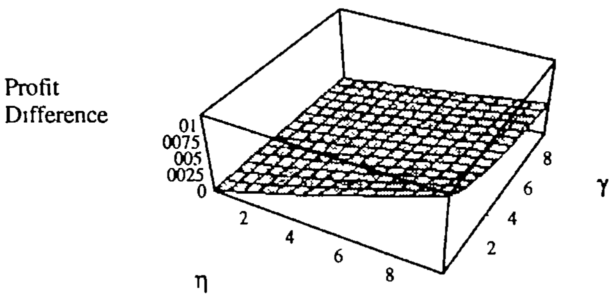


FIGURE 8
Difference Between Retailer A's Equilibrium Profits in CM–BCM and BCM–BCM Scenarios as a Function of Cross-Price Sensitivities



CM and Category Profits

So far in our analysis, the move to CM appears to offer little benefit to Retailer A. However, this conclusion changes when we examine this retailer's category profits (average gross margin times sales in dollars) after CM adoption. From its inception, CM has been touted as a mechanism for retailers (and manufacturers) to build overall category profits (see, e.g., *Category Management Report* 1995; Food Marketing Institute 1995). Our findings, summarized in the following proposition, support this contention and are consistent with the retailer's strategies in the category.

> P_6: All else being equal, the profits of a product category will increase when a retailer (Retailer A) moves the category from BCM to CM, irrespective of whether Retailer C remains with BCM (i.e., a CM–BCM scenario) or shifts to CM (i.e., a CM–CM scenario)

Figure 8 displays the positive difference between Retailer A's equilibrium profits in the CM–BCM and BCM–BCM scenarios at various values of η and γ. The realization of higher profits despite a decline in Retailer A's unit sales as well as revenues implies a significant increase in this retailer's unit gross margin. A contribution to this increase in unit gross margin comes from a decline in the brands' equilibrium wholesale prices. As illustrated in Figure 9, our analytical results indicate that equilibrium wholesale prices in the CM–BCM scenario are lower than the corresponding levels in the BCM–BCM scenario.

The equilibrium wholesale price is lower in the CM–BCM scenario because of the reduction in the overall demand for the manufacturers' products caused by Retailer A's price increase. More precisely, in the face of lowered total market demand, the competing manufacturers maximize their individual profits at a lower wholesale price. Effectively, therefore, the move to CM helps Retailer A gain profits at the expense of the suppliers.

The lower wholesale price induced by Retailer A's move to CM also benefits the competing Retailer C that stays with BCM. Figure 10 displays Retailer C's increase in profits when Retailer A moves from BCM to CM. Thus, within the context of our model, both retailers gain profits at the expense of the manufacturers, even though only one retailer adopts CM. The analysis of a retailer move from BCM–BCM to CM–CM is analogous.

FIGURE 9
Difference Between Manufacturers' Equilibrium Wholesale Prices in CM–BCM and BCM–BCM Scenarios as a Function of Cross-Price Sensitivities

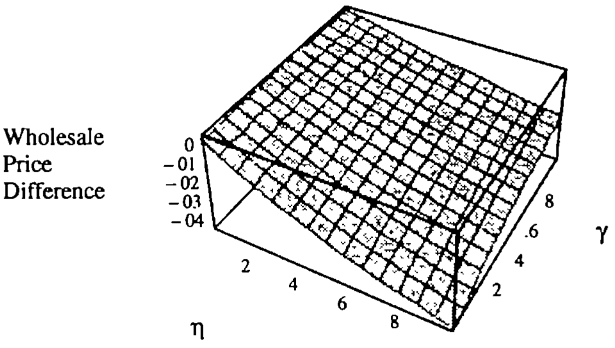
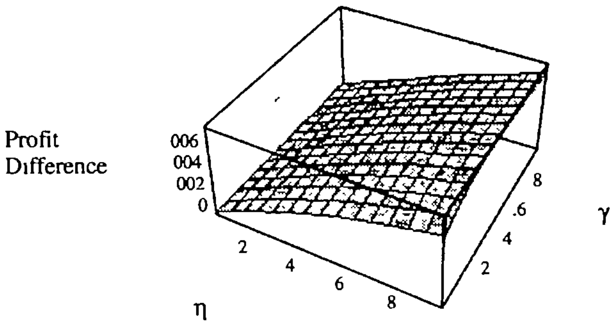
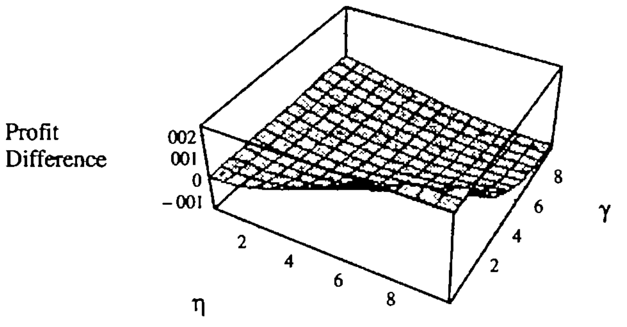


FIGURE 10
Difference Between Retailer C's Equilibrium Profits in CM–BCM and BCM–BCM Scenarios as a Function of Cross-Price Sensitivities



Adoption of CM will always increase Retailer A's profit, as stated in P_6. However, because A's action also enhances Retailer C's profitability, it would be interesting to compare the relative profits. An evaluation and comparison of the equilibrium profits of Retailers A and C in the CM–BCM scenario (Figure 11) shows that Retailer A's equilibrium profits are greater than those of Retailer C only under certain circumstances. Retailer A's profits are higher if the interbrand cross-price sensitivity is high (i.e., η close to unity) and if the interstore cross-price sensitivity, γ, is close to zero. Conversely, Retailer C's equilibrium profits can dominate those of Retailer A when η is large and γ is small. That is, although Retailer A's profits under CM are higher than its own profits under BCM, relative to Retailer C, Retailer A can enjoy higher profits if few consumers visit the competing retailer, which has lower prices. But if cross-store shopping is significant, Retailer A's improved margin under CM does not adequately compensate for its loss in demand to Retailer C. This leads us to the following proposition:

FIGURE 11
Difference Between Retailer A's and Retailer C's Equilibrium Profits in CM–BCM Scenario as a Function of Cross-Price Sensitivities



P_7. Retailer A's category profits are greater than those of Retailer C when interbrand cross-price sensitivity, η, is high and interstore cross-price sensitivity, γ, is low, and Retailer A's category profits are lower than Retailer C's profits when η is low and γ is high.

P_7 echoes some conclusions of Cottrell's (1995) study: "It is still not clear that those [retailers] who don't practice [CM] find themselves at any competitive disadvantage. In fact, the study found many [retailers] to be performing better than those competitors who were practicing it" (*Progressive Grocer* 1995, p. S8).

Empirical Tests of the Propositions

Data

Empirical tests of the propositions require time series data from a trading area where a retailer is known to have moved to CM. More precisely, time series data covering pre-CM and CM regimes for a retailer and its competitors are needed to test the propositions. However, such data on the effects of CM are difficult to obtain because CM is a fairly recent phenomenon, which limits the number of retailers that have databases comprehensive enough to capture category performance before and during CM. Fortunately, the data set used in this study overcomes this hurdle, providing researchers and practitioners with a rare opportunity to measure CM effects.

Aggregate store-level weekly scanner data from 21 stores of a national supermarket retail chain, hereafter called Retailer A, that had moved its laundry detergent category to CM were obtained from Information Resources Inc. (IRI). The stores are all located in one defined Midwestern U.S. urban market and together account for 35% share of laundry detergent sales in this market. The data set also contains aggregated information from the major competitors of Retailer A, hereafter labeled Retailer C. The data include the weekly average (weighted by stockkeeping unit sales) unit retail prices as well as the weekly unit sales in the laundry detergent category for Retailers A and C for 156 weeks from January 1, 1993, through December 31, 1995. In general, implementation of CM in a product category by a retailer occurs over a period of time rather than during a particular week. The intervention analysis methodology employed here requires a specific date for the switchover to CM, however. The managers of the supermarket chain indicated to the authors that CM began in earnest around the 57th week of the data. Therefore, for analytical purposes we have assigned this week as a switchover date, acknowledging fully that CM implementation was spread over a period of time around that date. None of the competing retailers in Retailer C adopted CM during this three-year period; all stayed with traditional management approaches (BCM) throughout. Thus, the data set covers 56 weeks of the pre-CM regime (i.e., BCM) and 100 weeks of the CM regime for Retailer A and 156 weeks of only BCM regime for Retailer C. Unfortunately, the data set does not include information on wholesale prices or the retailers' margins. Therefore, we are not in a position to rigorously test our analytical propositions pertaining to retailers' profits.

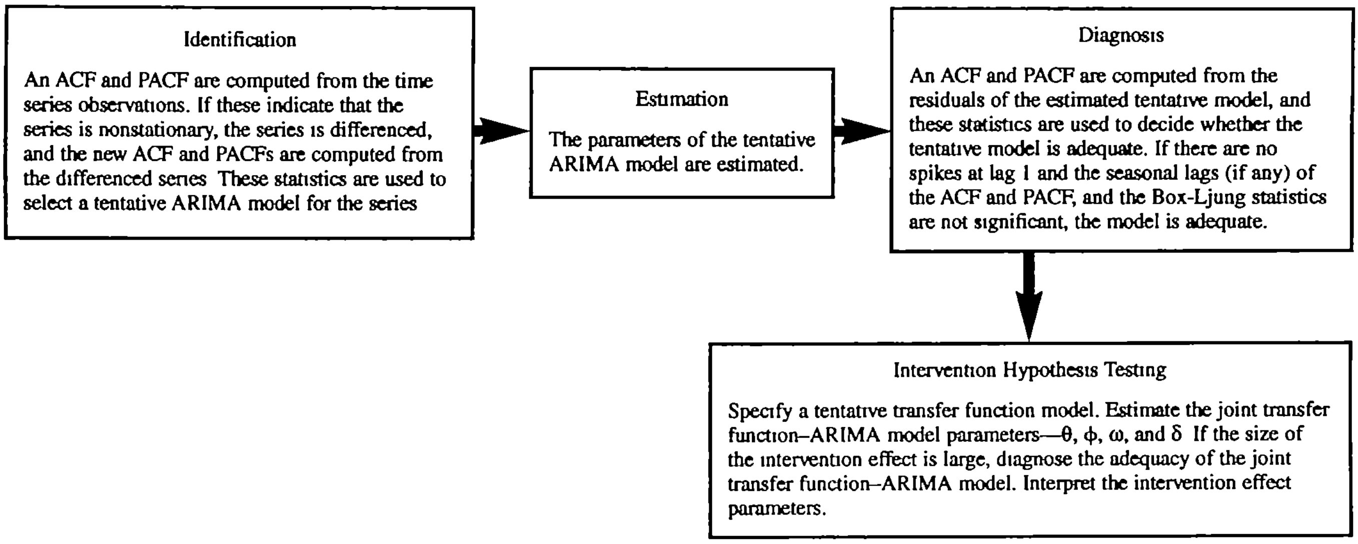
Methodology

To test the propositions related to CM's effects on average prices and sales, a simple t-test might be used to compare the means of the dependent measures (average prices, sales, revenues) before and after adoption of CM by Retailer A. However, the use of a t-test to determine whether a significant difference exists between the means of the two regimes is not appropriate when the dependent measures come from the same time series. This is because a t-test assumes that data for each group are independently generated from samples with normal distributions and constant variances. The time series data used in the study does not meet these assumptions because of the presence of autocorrelation. Therefore, we employ intervention or interrupted time series analysis (e.g., Box and Tiao 1975; McDowall et al. 1980) to study the impact of Retailer A's adoption of CM on prices, sales, and revenues. Although applications of intervention analysis in the marketing literature are few (e.g., Krishnamurthi, Narayan, and Raj 1986; Mulhern and Leone 1990; Wichern and Jones 1977), the technique is widely used in other social sciences. Figure 12 (see McCain and McCleary 1979) summarizes the details of the four stages—autoregressive integrated moving-average method (ARIMA) identification, estimation, diagnosis, and intervention hypothesis testing—of the intervention analysis procedure.

Empirical Analyses

We now investigate P_1 through P_6, which are derived from our analytical model, using the intervention analysis approach. However, to begin with, we perform a rough test of whether the laundry detergent category at Retailer A is characterized by conditions favoring CM—a high interbrand cross-price sensitivity at Retailer A and demand that is relatively insensitive to other retailers' prices. Following Raju, Sethuraman, and Dhar (1995), we use the category own-price sensitivity as a surrogate for national brand cross-price sensitivity. This approach is reasonable given the one-to-one relationship between own-price sensitivity η' and cross-

FIGURE 12
Intervention Analysis: Modeling Strategy



An ACF and PACF are computed from the time series observations. If these indicate that the series is nonstationary, the series is differenced, and the new ACF and PACFs are computed from the differenced series These statistics are used to select a tentative ARIMA model for the series

The parameters of the tentative ARIMA model are estimated.

An ACF and PACF are computed from the residuals of the estimated tentative model, and these statistics are used to decide whether the tentative model is adequate. If there are no spikes at lag 1 and the seasonal lags (if any) of the ACF and PACF, and the Box-Ljung statistics are not significant, the model is adequate.

Specify a tentative transfer function model. Estimate the joint transfer function–ARIMA model parameters—θ, ϕ, ω, and δ If the size of the intervention effect is large, diagnose the adequacy of the joint transfer function–ARIMA model. Interpret the intervention effect parameters.

TABLE 1
Price Sensitivities of Retailer A in the Pre-CM Period

Variables	Parameter Values
Intercept	79,467.16*
Intrastore own-price sensitivity, η′	–13,762.10*
Interstore cross-price sensitivities, γ	2711.65 (n.s.)

*Significant at the $p < .01$ level.
Notes: $R^2 = .310$, adjusted $R^2 = .284$, F = 11.93. n.s. = not significant.

price sensitivity η, namely, η′ = (1 + η), in our specification of the demand functions (Equations 1–4). Consistent with the linear form of the demand functions assumed in the analytical model, we estimate the following equation:

$$(5) \qquad Q^t_A = \alpha + \eta' P^t_A + \gamma P^t_C + e_A,\ t = 1, 2, \ldots, 56,$$

where Q^t_A = Retailer A's weekly unit sales of laundry detergent, P^t_A = Retailer A's average weekly unit price, η′ = intrastore own-price sensitivity, P^t_C = Retailer C's average weekly unit price, γ = interstore cross-price sensitivity, α = intercept, and e_A = the error term. The regression results are reported in Table 1.

The results indicate that the own-price price sensitivity of the average item in the category, η′, is negative and significant for Retailer A. The nonsignificant but positive estimate of the interstore cross-price sensitivity (γ) suggests that little price-based cross-store shopping takes place for brands in the category. Overall, the results suggest that the laundry detergent category possesses the competitive characteristics that support Retailer A's move to CM for this category.

Testing Implications of Propositions on CM and Retail Price

A testable implication of P_1 is that Retailer A's average unit retail price of laundry detergents in the CM regime will be higher than the average unit retail price level in the pre-CM regime. A testable implication of P_2 is that the increase in the average unit retail price of Retailer A as it moves from pre-CM to CM will be higher than the increase, if any, of the average unit retail price of Retailer C. Summary descriptive statistics with respect to the mean of the laundry detergent category's weekly average unit price series of Retailers A and C before and after Retailer A's move to CM are shown in Table 2. It appears that Retailer A's mean weekly average unit price rose by approximately $.33 after the move to CM. Furthermore, Retailer A's mean weekly average unit price was $.16 lower than that of Retailer C in the pre-CM regime but higher by approximately $.06 in the CM regime.

The time series plots of Retailer A's weekly average unit prices and the difference between Retailer A's and Retailer C's weekly average unit price series are displayed in Figures 13 and 14, respectively. Figure 13 indicates that there is a gradual upward shift in A's prices from the pre-CM period to the CM period, and Figure 14 shows that Retailer A's prices rose more and were higher on average than those of Retailer C in the CM period.

Intervention analysis tests of P_1 and P_2. The results of the ARIMA model identification and estimation stages with respect to the time series data shown in Figures 13 and 14 are reported in Table 3. Diagnosis checks of the autocorrelation functions (ACFs) and the partial autocorrelation functions (PACFs) of the residuals of each of the estimated models in Table 3 revealed that they were white noise; that is, the models were found to be adequate.

Figures 13 and 14 show that the series in each case underwent a gradual and permanent change after the adop-

TABLE 2
Descriptive Statistics of Key Variables

Relevant Proposition	Variable	Pre-CM Regime Mean	Pre-CM Regime Standard Deviation	Pre-CM Regime Minimum	Pre-CM Regime Maximum	CM Regime Mean	CM Regime Standard Deviation	CM Regime Minimum	CM Regime Maximum
P_1	Weekly average unit price of A	3.77	.21	3.21	4.13	4.11	.29	3.43	5.05
P_2	Weekly average price difference between A and C	–.16	.23	–.74	.54	.06	.26	–.73	1.16
P_3	Weekly average unit sales of A	38,257	5198	30,007	55,917	32,990	3975	27,124	49,677
P_4	Weekly average market share of A	.344	.028	.280	.420	.346	.025	.280	.430
P_5	Weekly average revenues of A	143,589	16,471	115,100	206,893	135,295	15,567	106,657	195,606
P_6	Computed weekly average profit of A	22,313	7331	1731	35,438	30,716	9586	10,368	65,728

FIGURE 13
Retailer A's Weekly Average Unit Prices

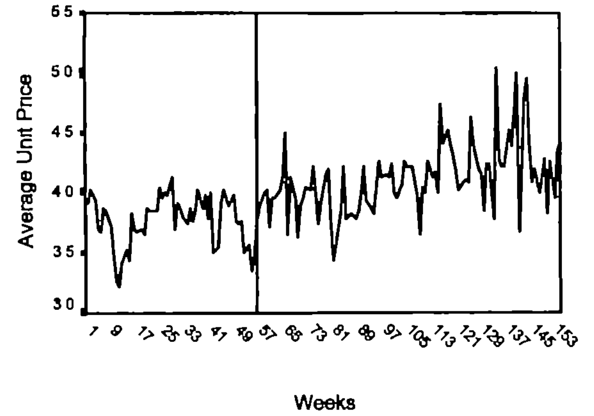
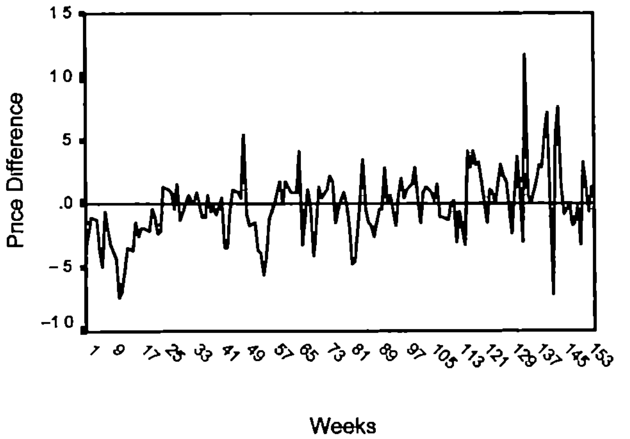


FIGURE 14
Difference Between Retailer A's and Retailer C's Weekly Average Unit Prices



tion of CM by Retailer A. Therefore, the following models for the intervention hypothesis testing stage of the analysis were specified:

$$\text{(6a)} \quad p_{A_t} = \delta p_{A_{t-1}} + \omega I_t + a_t - \theta_1 a_{t-1},$$

$$0 < \delta < 1 \text{ and } I_t = \begin{cases} 0 & \text{for } t < 57 \\ 1 & \text{for } t \geq 57 \end{cases}, \text{ and}$$

$$\text{(6b)} \quad p_{A_t - C_t} = \delta p_{A_{t-1} - C_{t-1}} + \omega I_t + a_t - \theta_1 a_{t-1};$$

$$0 < \delta < 1 \text{ and } I_t = \begin{cases} 0 & \text{for } t < 57 \\ 1 & \text{for } t \geq 57 \end{cases}.$$

Note that in these equations, $\delta p + \omega I$ (elsewhere, simply ωI) is the intervention component, or what is commonly referred to as the "transfer function." Furthermore, all the series that we consider in this article have been differenced once to make them stationary. The maximum likelihood estimates of the parameters of these models are reported in Table 3.

Diagnosis checks applied to the residuals of each of the estimated models showed the residuals to be white noise, indicating that the models fit the data well. As shown in Table 3, the ω coefficient in Equation 6a is positive and statistically significant, which indicates that Retailer A's adoption of CM resulted in increased prices. For example, the first postintervention observation is $Y_{57} = .206$, which implies that the level of the series rose by approximately \$.21 in the first postintervention period. Similarly, in each subsequent week t, the increment in the level of the price is δ^t, where $\delta = .223$. The asymptotic level of the series is .27 (or $.206/[1 - .223]$), which implies that adoption of CM by Retailer A gradually and permanently increased average unit prices in the category by approximately \$.27. Prices under CM are approximately 7% higher than prices under BCM for Retailer A. Overall, the results support P_1 and lead to the conclusion that adoption of CM by Retailer A resulted in a significant increase in the average unit retail price in the product category from its pre-CM level.

For P_2, the results in Table 3 show that the ω coefficient is positive and significant. Because we are working with the price difference series, the positive coefficient indicates that the difference between the changes in the price of Retailer A and the changes in the price of Retailer C was positive. The significant δ coefficient means that the difference between their price changes was gradual and permanent. Thus, P_2 is supported by the data.

Testing Implications of Propositions on CM and Sales

A testable implication of P_3 is that Retailer A's shift to CM will lower this retailer's category sales. Summary descriptive statistics with respect to the means of the weekly category unit sales of Retailer A in the pre-CM and CM regimes are shown in Table 2, and the graph of the weekly unit sales series is displayed in Figure 15. From Table 2, it is clear that the weekly unit sales declined from the pre-CM period to the CM period. The average weekly decline was approximately 5267 units. Therefore, Figure 15 and Table 2 suggest that there was indeed a significant decline in Retailer A's weekly unit sales after adoption of CM.

Intervention analysis for P_3. Retailer A's weekly category unit sales (S_{A_t}) data were log-transformed and then identified as an ARIMA (0, 1, 1) process. The results of the identification and estimation stages are reported in Table 3. Figure 15 shows that the category unit sales for Retailer A underwent an abrupt, permanent decline with the adoption of CM. Therefore, the intervention hypothesis test model was specified as

$$\text{(7)} \quad S_{A_t} = \omega I_t + a_t - \theta_1 a_{t-1} \text{ where } I_t = \begin{cases} 0 & \text{for } t < 57 \\ 1 & \text{for } t \geq 57 \end{cases}.$$

Table 3 reports the maximum likelihood estimates of the parameters of Equation 7. As shown in Table 3, the ω coefficient in Equation 7 was found to be negative and statistically significant, which indicates that Retailer A's adoption of CM had a significant, negative effect on category sales. More specifically, because the estimate of the ω coefficient is stated in natural logarithms, the effect of ω is actually e^{ω}.

TABLE 3
Identification, Estimation, and Intervention Hypotheses Results

Relevant Proposition	Series	Identification of Series	Estimation of Series	Maximum Likelihood Estimates of Parameters for Intervention Hypothesis				
				θ_1	θ_2	ω	δ	ϕ_1
P_1	Weekly average unit price of A	ARIMA (0, 1, 1) $p_{A_t} = a_t - \theta_1 a_{t-1}$	$\theta_1 = .72^{***}$	.896***	N/A	.206**	.223***	N/A
P_2	Weekly average price difference between A and C	ARIMA (0, 1, 1) $p_{A_t - C_t} = a_t - \theta_1 a_{t-1}$	$\theta_1 = .85^{***}$	.909***	N/A	.168**	.138**	N/A
P_3	Weekly average unit sales of A	ARIMA (0, 1, 1) $S_t = a_t - \theta_1 a_{t-1}$	$\theta_1 = .89^{***}$	.867***	N/A	–.190***	N/A	N/A
P_4	Weekly average market share of A	ARIMA (0, 1, 2) $ms_{A_t} = a_t - \theta_1 a_{t-1} - \theta_2 a_{t-2}$	$\theta_1 = .69^{***}$ $\theta_2 = .24^{***}$	.320 n.s.	.645***	–.002 n.s.	–.485***	N/A
P_5	Weekly average revenues of A	ARIMA (0, 1, 2) $R_{A_t} = a_t - \theta_1 a_{t-1} - \theta_2 a_{t-2}$	$\theta_1 = .73^{***}$ $\theta_2 = .18^{***}$	.739***	.181***	–.092**	N/A	N/A
P_6	Computed weekly average profit of A	ARIMA (0, 1, 1) $\pi_{A_t} = a_t - \theta_1 a_{t-1}$	$\theta_1 = .38^{***}$	.403***	N/A	.229*	N/A	N/A

*Significant at the $p < .10$ level.
**Significant at the $p < .05$ level.
***Significant at the $p < .01$ level.

Notes: n.s. = not significant, N/A = not applicable. The vertical line at the 57th week depicts the time of adoption of CM in the category by Retailer A. The horizontal line indicates zero price difference.

Because $e^{.19} = 1.21$, it can be concluded that the ratio of the pre-CM series to the CM series is 1.21, or a value that represents a 17% reduction in the average category unit sales from the pre-CM period. Given that the mean pre-CM category sales level was 38,257 units each week (Table 2), the results indicate that the intervention of CM was associated with an abrupt and permanent drop in the category unit sales by approximately 6503 units a week. Thus, the empirical results strongly support P_3.

A testable implication of P_4 is that Retailer A's shift to CM will lower the retailer's category sales in comparison with Retailer C's sales. Thus, this proposition aims at a relative comparison of sales between the two retailers. Given that Retailer A controls approximately 35% of the market, comparison of sales between the retailers in absolute terms is meaningless. Therefore, we resort to market share. This measure will provide a suitable relative comparison for the purposes of this proposition. Summary descriptive statistics with respect to the means of the weekly market shares of Retailer A in the pre-CM and CM regimes are shown in Table 2, and the graph of the weekly market share series is displayed in Figure 16.

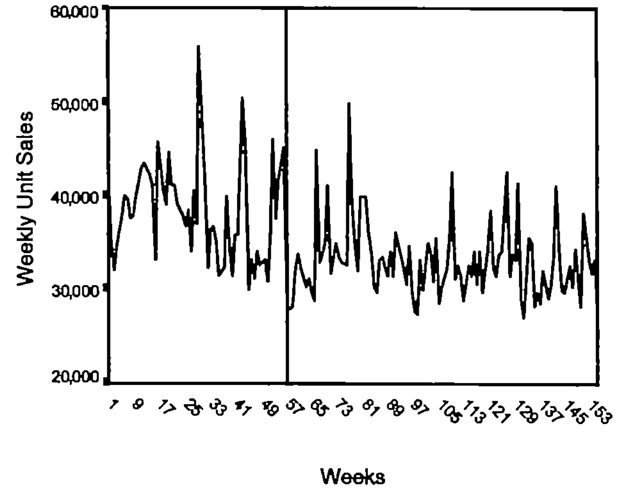
Intervention analysis for P_4. The results of the ARIMA model identification and estimation stages are reported in Table 3. Figure 16 shows no detectable change in the market share with the adoption of CM. However, to test the proposition, we conjecture a gradual decline in the market share. Therefore, the intervention hypothesis test model was specified as follows:

$$(8) \qquad ms_{A_t} = \delta ms_{A_t} + \omega I_t + a_t - \theta_1 a_{t-1} - \theta_2 a_{t-2},$$

$$\text{where } I_t = \begin{cases} 0 & \text{for } t < 57 \\ 1 & \text{for } t \geq 57 \end{cases}.$$

Table 3 reports the maximum likelihood estimates of the parameters of Equation 8. As shown in Table 3, the ω coefficient is found to be negative, but it is not significant. Therefore, P_4 cannot be supported from the data.

FIGURE 15
Retailer A's Weekly Average Unit Sales



Testing Implications of Propositions on CM and Revenues

A testable implication of P_5 is that Retailer A's revenues (weekly average unit price times unit sales volume) will decline after adoption of CM. Table 2 presents the summary descriptive statistics on the means of Retailer A's weekly revenues in the pre-CM and CM regimes, and Figure 17 displays the graph of the revenue series. The data suggest that weekly average revenue declined for Retailer A.

Intervention analysis for P_5. Retailer A's weekly average revenues (R_{At}) data were log-transformed and then identified as an ARIMA (0, 1, 2) process. The results of the identification and estimation stages are reported in Table 3. Figure 17 shows that the revenues for Retailer A underwent an abrupt, permanent decline with the adoption of CM in a manner sim-

FIGURE 16
Retailer A's Weekly Average Market Share

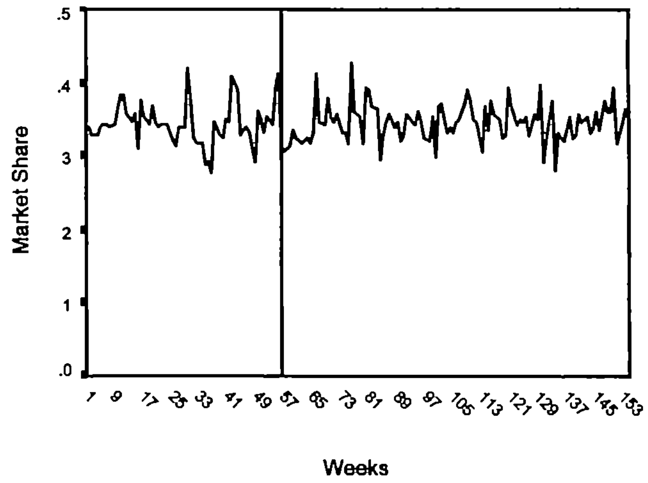
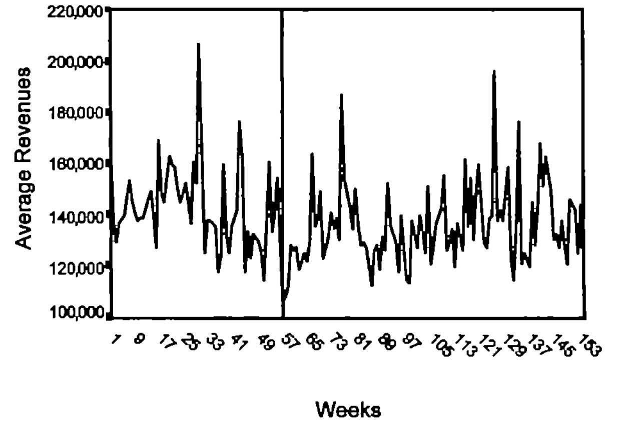


FIGURE 17
Retailer A's Weekly Average Revenue



ilar to the category unit sales series. Therefore, the intervention hypothesis test model was specified as follows:

$$(9) \qquad R_{A_t} = \omega I_t + a_t - \theta_1 a_{t-1} - \theta_2 a_{t-2},$$

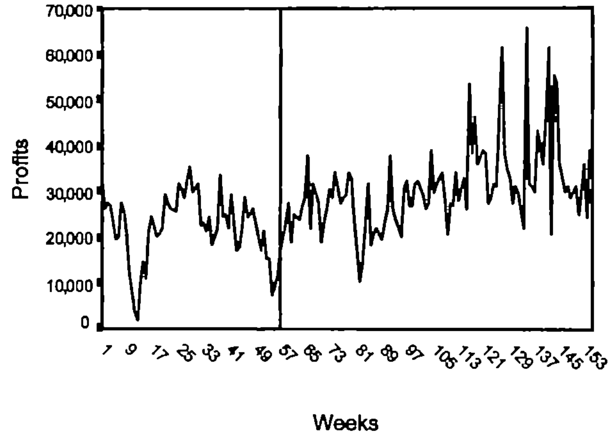
$$\text{where } I_t = \begin{cases} 0 & \text{for } t < 57 \\ 1 & \text{for } t \geq 57 \end{cases}.$$

Table 3 reports the maximum likelihood estimates of the parameters of Equation 9. As shown in Table 3, the ω coefficient in Equation 9 was found to be negative and statistically significant, which indicates that Retailer A's adoption of CM had a significant, negative effect on the revenues. Because the estimate of the ω coefficient is stated in natural logarithms, the actual effect of ω is e^{ω}. Because $e^{09} = 1.10$, it can be concluded that the ratio of the pre-CM series to the CM series is 1.10, or a value that represents a 9% reduction in the weekly revenue stream from the pre-CM period. Given that the mean pre-CM weekly revenue was $143,589 (Table 2), the results indicate that the intervention of CM was associated with an abrupt and permanent drop in the revenues by approximately $14,358 a week. Thus, P_5 is strongly supported by the data. Next, we turn to the profits.

Sensitivity Analyses with Respect to Profits

P_6 implies that Retailer A's profits will increase after adoption of CM. We cannot directly test this proposition because the database does not contain direct profit information. Therefore, we perform a simulation analysis to determine if P_6 can be supported by the available data, despite the fall in unit sales as well as revenues. To calculate profits, we must estimate the margins. Different trade publications indicate that supermarket margins in the laundry detergent category vary between 12% and 20%. We performed several intervention analyses assuming different profit margins—12%, 20%, and 16% (the average of these two). The results were all similar. Therefore, we report the result for a 16% margin. We took the average category unit price in the pre-CM period, $3.77 (see Table 2), and subtracted 16% of it to come up with the approximate average unit wholesale price, $3.17, for Retailer A in the pre-CM period. We then calculated each week's margin by subtracting this number from the corresponding weekly average unit price. For the CM period, we assumed further that the wholesale prices did not rise, and therefore we used the same wholesale prices for the CM period as well. Thus, we multiplied each week's average unit margin (in dollars) by the corresponding unit sales to get to the profits. The last row of Table 2 displays the summary descriptive statistics for the computed weekly average profits of Retailer A, and Figure 18 shows the time series. The data suggest that weekly average profit increased for Retailer A. This took place despite declining unit sales and declining weekly revenues.

FIGURE 18
Retailer A's Computed Weekly Average Profit



Intervention analysis for P_6. Retailer A's weekly average profits (π_{A_t}) data were log-transformed and then identified as an ARIMA (0, 1, 1) process. The results of the identification and estimation stages are reported in Table 3. Figure 18 shows that the revenues for Retailer A underwent an abrupt, permanent increase with the adoption of CM. Therefore, the intervention hypothesis test model was specified as follows:

$$(10) \quad \pi_{A_t} = \omega I_t + a_t - \theta_1 a_{t-1}, \text{ where } I_t = \begin{cases} 0 & \text{for } t < 57 \\ 1 & \text{for } t \geq 57 \end{cases}$$

Table 3 reports the maximum likelihood estimates of the parameters of Equation 10. As shown in Table 3, the ω coefficient in Equation 10 was found to be positive and statistically significant, which indicates that Retailer A's adoption of CM had a significant, positive effect on the category profits. Because the estimate of the ω coefficient is stated in natural logarithms, the effect of ω is actually e^{ω}. Because $e^{22} = 1.25$, it can be concluded that the ratio of the CM series to the pre-CM series is 1.25, or a value that represents a 25% increase in the weekly average profits from the pre-CM period. Given that the mean pre-CM weekly average profits was $22,313 (see Table 2), the results indicate that the intervention of CM was associated with an abrupt and permanent increase in the weekly profits of Retailer A in the laundry detergent category by approximately $5578.

Basically, the sensitivity analysis suggests that if wholesale prices had stayed the same, profits would have been significantly higher for Retailer A. Because this analysis was based on the assumption of constant wholesale prices, the analysis would still be true if the wholesale prices declined as predicted by our theory.

Disaggregate Analysis

In addition to the aggregated analysis, we also conducted a disaggregated analysis of the data. Retailer A in the market area under scrutiny faced two major competitors—one is a typical hi/lo retailer and operates 14 stores in the trading area, and the second is a discount chain with 5 stores in the trading area. The combined market share of the three chains is 85%. (The remaining competitors are small operators that would not affect Retailer A substantively.) In most neighborhoods or locales within the trade area, Retailer A battles only one of these two competitors.

An identical intervention analysis approach was conducted on the disaggregated data pertaining to retail prices of the three chains before and during Retailer A's adoption of CM. The price series were identified as ARIMA (0, 1, 1), similar to that in the aggregate analysis. The results of the disaggregate analysis were identical to the substantive results of the aggregate analysis. Therefore, the data have captured the nature of the effects of CM in the particular product category.

Discussion of the Results and Implications for Managers and Researchers

Category management is a widely heralded process designed to help the retailer achieve overall category performance objectives by coordinating buying, merchandising, and pricing decisions for products in the category. Although adoption of CM by retailers is rapidly increasing (ACNielsen 1998), little research on the effects of CM adoption on retailer prices and performance has been performed. In the present study, we attempt to measure how CM affects retailer prices, sales, revenues, and profits under different competitive conditions.

Several interesting propositions emerged from the analytical portion of the study that were subsequently confirmed by empirical analysis. For example, the data indeed show that a gradual and permanent increase in prices of laundry detergent brands occurred after CM was implemented. Prices in the laundry detergent category at the retailer were significantly greater than prices in the same category among competing retailers that did not move to CM. The results are consistent with previous work on manufacturer adoption of CM in a packaged goods category, which showed that interbrand price coordination produced higher prices for the brands in the manufacturer's product line (Zenor 1994).

Our model in this article offers one rationale for price increase under CM—coordinated pricing. However, the price increases produced by CM in Retailer A could be an outcome of several strategies employed by the retailer, including a profit-generating strategy, which is expressly discussed in the CM literature and applied by many retailers in practice (e.g., *Category Management Report* 1995; McLaughlin and Hawkes 1994; *Progressive Grocer* 1995). For example, retailer deletion of low-margin items (Broniarczyk, Hoyer, and McAlister 1998) and a reduced emphasis on price promotions in the category may have contributed to the price increase One downside associated with each of these strategies is the potential for retail prices to increase and thereby negatively affect retailer performance if a substantial segment of the category's customers are price sensitive. The present study appears to capture this phenomenon, as is shown by the drop in consumer demand for Retailer A during the CM period.

Despite the higher prices under CM, the retailer's move to CM from a traditional BCM approach built the category profitability. Profits rise under CM over the traditional management approaches (i e., BCM) because a decrease in consumer demand causes manufacturers to lower their (wholesale) prices, which, in combination with higher retail prices, produces higher gross margins for the retailer. Therefore, the present study supports the claims of CM consultants, experts, and practitioners that CM produces enhanced business results (*Category Management Report* 1995).

The findings also show that a retailer enjoys higher profits under CM than do competing non-CM retailers, but only under certain conditions. For example, CM adoption produces the greatest economic benefits for the retailer when interbrand competition is high and consumer store switching is low. Few economic benefits exist for the CM retailer when little brand competition and much interstore competition are present. These findings suggest that categories characterized by much interbrand competition and little cross-store shopping should be the focus of the retailer's CM efforts.

Implications for Managers

The present research holds several interesting implications for practitioners. First, the increase in retail prices under CM calls into question the consumer benefits of CM. The practitioner literature argues that CM adoption will enhance consumer welfare, as is captured in the definition of CM: "A distributor/supplier process of managing categories as strategic business units, producing enhanced business results by *focusing on delivering consumer value*" (*Category Management Report* 1995, p. vii). The price increases fostered by CM represent a diminution rather than an improvement in consumer value. These findings are not the first "red flags" that question the magnitude of consumer benefits from CM adoption. Research shows that retailer implementation of CM led some consumers to switch to non-CM stores, noting that "There is a certain naiveté on the part of retailers and wholesalers who believe [the benefit of] Category Management is transparent to the consumer" *(Progressive Grocer* 1995, p. S9). The selection of a profit-generating strategy for the category may have contributed to the price increases in the category, which suggests that other strategies might produce different, more consumer-beneficial results. Retailers should explore how CM adoption will benefit the consumer before implementing CM in the category.

A second major implication of the research is that the economic outcomes of CM are category specific. Retailers should implement CM in product categories in which (1) cross-price sensitivities among brands are high or much brand switching exists and (2) cross-store price sensitivities are low or little price-based cross-store shopping takes place for brands in the category. This implication is consistent with research showing that manufacturer adoption of CM has its greatest impact on manufacturer profitability when cross-price sensitivities among products in the manufacturer's product line are high (Zenor 1994). The results suggest that the common practice of grocery retailers—applying CM to categories with high sales volumes (McLaughlin and Hawkes 1994)—is too simplistic. Empirical research shows that many high-volume categories (e.g., cookies, crackers), which appear to be ideal candidates for CM, actually possess low elasticities (e.g., Hoch et al. 1995) and probably low cross-price elasticities. Therefore, using high category sales volume as a major criterion for selecting product categories for CM may provide low returns for the retailer.

A third implication of the study is that retailer adoption of CM appears to offer manufacturers fewer economic benefits than it offers retailers, contradicting the popular notion that CM benefits retailers and manufacturers (e.g., Food Marketing Institute 1995; *Category Management Report* 1995). This implication is based on the results that show manufacturer prices and margins declining, likely producing a drop in manufacturer profits. The findings of the present study are consistent with reports of concern among manufacturers that retailer migration to CM will produce a win–lose situation in the channel (*The Economist* 1997; McLaughlin and Hawkes 1994; Reda 1995). One approach that might alleviate such a scenario is for retailers and manufacturers to codevelop category plans, strategies, and tactics and jointly implement them to achieve mutually satisfactory goals. Experts in CM have long advocated a high level of cooperation between manufacturers and retailers in implementing CM, though such a relationship is difficult to implement in practice (see *Category Management Report* 1995, pp. 107–12).

Finally, CM can support the retailer's ECR efforts. In the mid-1990s, ECR was a major thrust in the grocery industry: "ECR is a grocery industry strategy in which distributors and suppliers are working closely together to bring better value to the grocery consumer" (*Efficient Consumer Response* 1993, p. 1). The key strategies for ECR involve efficient product assortments, replenishment, promotion, and product introductions, and CM is directly linked to ECR primarily through category assortments and promotions. For example, CM can optimize the item mix by delisting slow-moving SKUs, an action consistent with the objectives of ECR. Ironically, the combination of fewer products and greater price coordination supports the retailer's ECR initiatives while violating a basic tenet of CM to enhance consumer value because retailer prices are higher. Also, ECR calls for a lowering of the intensity of consumer and trade promotions (see *Efficient Consumer Response* 1993, pp. 79–85), an activity consistent with some CM strategies that are available to retailers for their categories. Therefore, retail managers can employ CM to support some components of their ECR efforts.

Implications for Researchers

The study offers marketing researchers several interesting implications as well. First, the current study presents researchers with fresh insights on relationships among retailer and manufacturer pricing, retailer unit sales, and category profitability under CM. For example, increases in average category prices and decreases in overall category sales resulting from CM implementation are two relationships that were not predicted in the previous empirical work on CM (e.g., McLaughlin and Hawkes 1994; Zenor 1994) or in the practitioner literature. As research findings and empirical generalizations on CM grow, more sophisticated perspectives on CM effects will develop, leading to better models of the process.

A second, related implication of the study is that the drop in manufacturer prices and margins resulting from CM adoption can significantly affect the nature of the relationship between manufacturers and retailers. Experts and researchers in CM need to expand constructions of CM effects to include scenarios in which opportunism exists in channel relationships under a CM approach and offer remedies for the problems that result. For example, integrating work showing high relational exchange (i.e., role integrity, preservation of the relationship, and harmonization of relationship conflict among channel members) to limit opportunism in channels (Brown, Dev, and Lee 2000) should be undertaken to enhance the efficacy of CM for all channel members.

A third implication for researchers is that the effects of CM are complex, containing significant indirect influences. For example, retailer adoption of CM resulted in higher prices, which caused retail sales and manufacturer prices to decline. This set of effects resulted in higher retailer margins and category profits. The complexity of these effects should stimulate researchers to develop more robust models, perhaps using structural equations approaches (i.e., systems of equations) to gain information on the indirect effects of the phenomenon. Researchers also should consider multiple measures of performance when assessing CM effects, because single-measure models based on sales volume provide only a partial view of CM.

Finally, game theory in combination with intervention analysis represents a novel approach to the study of the impact of CM on retailer and manufacturer performance. Game theory generated interesting and practical propositions about CM effects, and intervention analysis was employed to test these propositions with longitudinal data. The present methodology complements the survey approaches employed by other researchers who describe retail practices and outcomes. Certainly, research using a variety of methodologies is warranted to tackle problems of interest to researchers and practitioners.

Limitations and Directions for Further Research

The limitations of the present research also represent opportunities for interesting further research in the area. One limitation is the informational assumptions of our analytical model. For example, manufacturers and retailers typically do not possess perfect information about one another's demand functions and costs as assumed in the model. Although rich data are available on manufacturer and retailer activities, in reality managers make decisions with imperfect knowledge about demand functions and costs. Further research might investigate how imperfect information among key decision makers influences CM outcomes. The model also assumes that the retailer seeks to maximize category profits Retailers are often interested in maximizing other objectives, such as category sales or store traffic. Under a different category strategy—say, traffic building—the conclusions from the model might have been different. A future study might explore CM effects under a sales-maximization approach or a traffic-building approach and compare the results to add greater insights into the implications of a retailer move to CM. Also, our study assumes constant costs on the supply side and no quantity discounts offered by manufacturers. These assumptions could be relaxed in further research, especially given that lowering supply chain costs is an important aspect of the overall ECR initiative. Another limitation of the study is that the model does not account for competing explanations for why category prices increased, as described previously. Future model builders in the CM area could incorporate factors such as product deletion and reduction of price discounts in their models to explain such phenomena.

Last, only one dimension of retailer CM, price coordination, was examined in the study. Category management is a much more complex process, involving coordinated buying, pricing, promotion, and merchandising of brands in the category. Future studies should examine how a more complete set of CM activities affects retailer and manufacturer performance. Furthermore, the present study focused on how retailer adoption of CM influenced retailer performance. Additional research is needed on how manufacturers are affected by retailer implementation of CM. The research could follow two tracks: focusing on how the relationship between the retailer and the manufacturer is influenced by retailer adoption of CM and how retailer adoption of CM affects manufacturer sales and profit performance. Much interesting work remains to be done on the complex process of CM.

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Kristof De Wulf, Gaby Odekerken-Schröder, & Dawn Iacobucci

Investments in Consumer Relationships: A Cross-Country and Cross-Industry Exploration

This research, investigating retailer–consumer relationships, has three distinct intended contributions: (1) It shows that different relationship marketing tactics have a differential impact on consumer perceptions of a retailer's relationship investment; (2) it demonstrates that perceived relationship investment affects relationship quality, ultimately leading to behavioral loyalty; and (3) it reveals that the effect of perceived relationship investment on relationship quality is contingent on a consumer's product category involvement and proneness to engage in retail relationships. The authors empirically cross-validate the underlying conceptual model by studying six consumer samples in a three-country, transatlantic, comparative survey that investigates two industries.

In the current retail environment, relationship marketing tactics play a predominant role because of the increased importance consumers attach to relational properties of their interactions with retailers (Crosby, Evans, and Cowles 1990; Dorsch, Swanson, and Kelley 1998). In comparison with manufacturers, retailers have an advantage in building enduring relationships with consumers because they are in a better position to detect consumer purchase patterns and apply this knowledge in a cost-efficient way (Sweeney, Soutar, and Johnson 1999). Examples of relationship marketing practices in retailing are widespread. Ritz-Carlton is well known for its personalized welcome and farewell of guests, using the guest's name when possible. Loyalty programs initiated by airlines consist of not only rewarding the most valuable customers in the form of mileage prizes but also showing recognition and providing special privileges.

Although academics recognize the importance of relationship marketing practices (Berry 1995; Goff et al. 1997), empirical evidence on the nature and extent of the impact of relationship marketing tactics on relationship quality is scarce (Gwinner, Gremler, and Bitner 1998). Specifically, although relationship marketing has a strong theoretical base in industrial and channel marketing (e.g., Doney and Cannon 1997), systematic research on relationship marketing in a consumer environment is lacking (Beatty et al. 1996). Yet several authors agree with Dwyer, Schurr, and Oh (1987), who note that relational bonds create benefits in business as well as in consumer environments (Christy, Oliver, and Penn 1996; Sheth and Parvatiyar 1995). In particular, collecting information from the consumer's side of the retailer–consumer dyad is considered an important future research avenue (Gwinner, Gremler, and Bitner 1998; Sheth and Parvatiyar 1995).

With that in mind, our objectives are threefold. First, we want to determine whether different relationship marketing tactics have a differential impact on consumer perceptions of relationship investment by the retailer.[1] We consider this important because retailers are often surrounded by uncertainty and incorrect beliefs about what matters to customers, which results in relationship marketing programs that are ineffectively implemented. Given the observation that retailers largely make use of traditional, defensive strategies, it is especially relevant to collect information on consumer perceptions of alternative, relationship-focused strategies (Beatty et al. 1996; Bolton 1998; Dorsch, Swanson, and Kelley 1998; Sirohi, McLaughlin, and Wittink 1998). Yet few efforts have been made to delineate different relationship marketing tactics (Christy, Oliver, and Penn 1996). Furthermore, hardly any systematic empirical investigation has been published that examines the reactions of consumers to relational strategies (Gwinner, Gremler, and Bitner 1998).

Second, we want to provide empirical evidence for the impact of perceived relationship investment on relationship quality, and ultimately on behavioral loyalty. Based on the reciprocity principle, this effect has been examined extensively in business markets (e.g., Anderson and Weitz 1992; Ganesan 1994; Huppertz, Arenson, and Evans 1978), but to our knowledge, it has not been included yet as a topic of empirical investigation in consumer research.

Third, this research is one of the first empirical studies designed to analyze whether the effect of perceived rela-

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[1] In a first draft of the manuscript, we had originally called the construct "perceived relationship investment" by the label "customer retention orientation." This label, "customer retention orientation," originated from qualitative research in the form of consumer focus groups and was defined as a customer's overall perception of the extent to which a seller actively makes efforts that are intended to contribute to the customer value of its regular customers. In response to one of the reviewers' concerns, we renamed the construct "perceived relationship investment" to convey more clearly the inherent meaning of our original construct and draw more directly from the terms that are strongly established in existing literature.

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tionship investment on relationship quality is contingent on consumer characteristics. Several authors stress that relationship marketing practices are not considered effective in every situation or context (Day 2000, Kalwani and Narayandas 1995) Yet few empirical efforts have been made to assess the moderating role of consumer characteristics on relationship marketing effectiveness (Beatty et al. 1996; Bendapudi and Berry 1997).

In addressing these issues, we hope to contribute to the aforementioned existing gaps in the relationship marketing research. Attempts to validate relationship marketing studies across settings are still exceptional (Geyskens et al. 1996), so we conduct a fairly comprehensive and rigorous test of our research hypotheses by empirically cross-validating our conceptual model in a multi-country and multi-industry context. Steenkamp and Baumgartner (1998) stress the need to validate models developed in one country, mostly the United States, in other countries as well.

Theoretical Background and Hypotheses

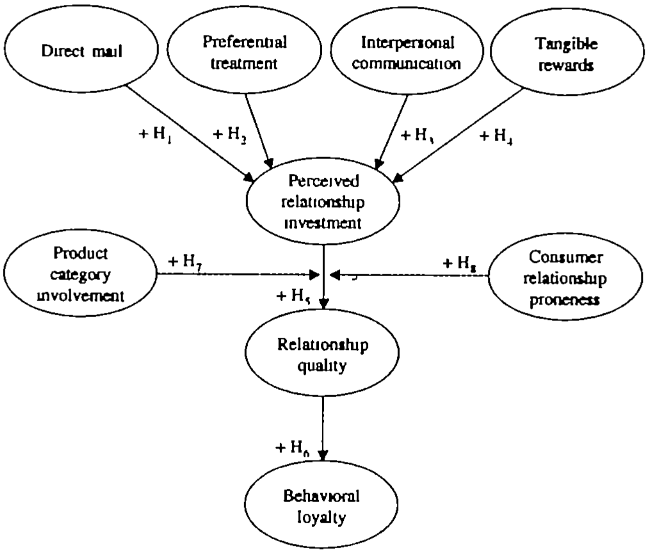
Although an all-encompassing theory of relationship marketing is still lacking (Bagozzi 1995), the principle of reciprocity is considered a useful framework for investigating exchange relationships (Huppertz, Arenson, and Evans 1978). Reciprocity is identified as a key feature explaining the duration and stability of exchange relationships (Larson 1992). Moreover, it is often considered one of the most robust effects found in psychological literature (Moon 2000). Gouldner (1960, p. 168) states that the generalized norm of reciprocity "evokes obligation toward others on the basis of their past behavior." The principle of reciprocity states that people should return good for good, in proportion to what they receive (Bagozzi 1995). According to the reciprocal action theory, actions taken by one party in an exchange relationship will be reciprocated in kind by the other party, because each party anticipates the feelings of guilt it would have if it violated the norm of reciprocity (Li and Dant 1997).

Reciprocity has regularly been used as a framework of thought or a key variable of interest in research on channel relationships. For example, reciprocity is apparent from the willingness of a firm to give preference to a supplier that is also a customer of the firm's products (Bergen, Dutta, and Walker 1992). Compaq refused to sell directly because doing so would constitute competing with its own dealers. Compaq's dealers considered this refusal a sign of Compaq's commitment to them, and the dealers reciprocated by providing the brand greater support and shelf space (Day 1990). In general, reciprocation of behavior will foster a positive atmosphere, remove barriers of risk, and enable channel relationships to move forward (Smith and Barclay 1997).

Bagozzi (1995) indicates that the phenomenon of reciprocity is also present in consumer–firm relationships, and he stresses that further research on relationship marketing should investigate the psychological manifestations of reciprocity and the way it functions in everyday consumer exchanges. Also, Huppertz, Arenson, and Evans (1978) indicate that the principle of reciprocity could be used for understanding consumer behavior in general. Nevertheless, Moon (2000) recently has questioned whether the norm of reciprocity is compatible with the realities of consumer research, since engaging in a reciprocal interaction between a consumer and a company would require a one-to-one interaction with every consumer. Given the recognized importance of the reciprocity principle in consumer relationships and given our focus on relationship marketing tactics that are targeted at individual consumers, we regard the concept of reciprocity as an appropriate framework of thought for building our conceptual model as depicted in Figure 1.

The idea behind our model is consistent with the work of Blau (1964), who recognizes that an investment of time, effort, and other irrecoverable resources in a relationship creates psychological ties that motivate parties to maintain the relationship and sets an expectation of reciprocation. We apply this principle in a consumer context, representing irrecoverable resources by the construct of perceived relationship investment The resulting constructs of relationship quality and behavioral loyalty, embodying consumers' reciprocation of a retailer's investments, reflect the extent to which consumers want to maintain their relationship. This is similar to Bagozzi's (1995) argument that consumers demonstrate loyalty to certain sellers in reciprocation of these sellers' investments in the relationship. In addition, Kang and Ridgway (1996) argue that consumers feel obligated to pay back the marketer's "friendliness." Moreover, to detect the extent to which relationship marketing tactics contribute to perceptions of relationship investment, we assess the relationship between four relationship marketing tactics (direct mail, preferential treatment, interpersonal communication, and tangible rewards) and perceived relationship investment. Finally, we incorporate consumer relationship proneness and product category involvement as

FIGURE 1
Hypothesized Model


Direct mail
Preferential treatment
Interpersonal communication
Tangible rewards
+ H1
+ H2
+ H3
+ H4
Perceived relationship investment
Product category involvement
+ H7
+ H8
Consumer relationship proneness
+ H5
Relationship quality
+ H6
Behavioral loyalty

moderators between perceived relationship investment and relationship quality. In the sections that follow, we define each of the constructs and describe their expected effects.

Perceived Relationship Investment

When a supplier makes a relationship investment of any kind on behalf of a customer, this customer ought to be favorably impressed (Hart and Johnson 1999). Investing time, effort, and other irrecoverable resources in a relationship creates psychological bonds that encourage customers to stay in that relationship and sets an expectation of reciprocation (Smith and Barclay 1997). Although the predominant approach regarding the construct of specific investment in a business-to-business or channel context has been to examine unrecoverable investments in a specific A-to-B relationship (e.g., Anderson and Weitz 1992; Smith and Barclay 1997), we examine investments that are unrecoverable only in the context of "one A to many B's," that is, a retailer to its set of regular customers rather than a retailer to one specific regular customer. The underlying rationale for this choice is that relationship marketing tactics directed at consumers are most often part of an overall relationship marketing strategy that is applied similarly to all regular customers rather than developed on a case-by-case basis as is common practice in business-to-business settings. Therefore, we define perceived relationship investment as a consumer's perception of the extent to which a retailer devotes resources, efforts, and attention aimed at maintaining or enhancing relationships with regular customers that do not have outside value and cannot be recovered if these relationships are terminated (Smith 1998).

We investigate the mediating role of perceived relationship investment, accounting for the connection between relationship marketing tactics and relationship quality. In line with our theoretical perspective of reciprocation, the measurement items of relationship investment emphasize an aim for reciprocation by consumers that is based on retention efforts made by a retailer (e.g., "This store makes efforts to increase regular customers' loyalty"). We position relationship marketing tactics applied by the retailer as antecedents of relationship investment to provide managerial guidelines as to what affects perceptions of relationship investment. Relationship quality, ultimately influencing behavioral loyalty, is positioned as a consequence of relationship investment. A positive path between relationship investment and relationship quality implies that the consumer reciprocates a retailer's actions.

Relationship Marketing Tactics

Few efforts have been made to define what relationship marketing tactics really are and how valuable consumers perceive them to be (Dorsch, Swanson, and Kelley 1998; Gwinner, Gremler, and Bitner 1998). Nevertheless, the successful establishment of commercial relationships is considered to depend largely on fine-tuning such tactics (Christy, Oliver, and Penn 1996; Dwyer, Schurr, and Oh 1987). In general, the literature distinguishes among three levels of relationship marketing (Berry 1995). A first level relies on pricing incentives to secure customer loyalty and is often referred to as level one relationship marketing. It is considered the weakest level of relationship marketing because competitors can easily imitate price. A second level of relationship marketing focuses on the social aspects of a relationship, which are exemplified by regularly communicating with consumers or referring to their names during encounters. These socially inspired tactics are usually bundled into what is called level two relationship marketing. Level three relationship marketing, offering structural solutions to customer problems, is not investigated in this study. The reason for this choice is that level three relationship marketing does not involve true relationship marketing tactics or skills, as Berry (1995, p. 241) argues: "At level three, the solution to the customer's problem is designed into the service-delivery system rather than depending upon the relationship-building skills." Consequently, we distinguish among four types of relationship marketing tactics distributed across level one relationship marketing (tangible rewards) and level two relationship marketing (direct mail, preferential treatment, and interpersonal communication).

Direct mail. We define direct mail as a consumer's perception of the extent to which a retailer keeps its regular customers informed through direct mail (e.g., Anderson and Narus 1990; Dwyer, Schurr, and Oh 1987; Morgan and Hunt 1994). In general, it is recognized that buyer–seller communication increases the probability of discovering behaviors that generate rewards; enhances the prediction of behavior of the other party and clarifies each other's roles (Doney and Cannon 1997; Smith and Barclay 1997); leads to the discovery of similarities; and encourages feelings of trust, special status, and closeness (Anderson and Narus 1990). By conveying interest in the customer, communication is often considered a necessary condition for the existence of a relationship (Duncan and Moriarty 1998). In our study, we limit communication media to direct communication media, because mass media communication does not allow for targeting specific groups such as regular versus nonregular customers. Moreover, the underlying reason for limiting direct communication media to direct mail is that in the research contexts investigated, other types of direct media communication are only occasionally used. As a result, we seek to establish that direct mail, as a way of communicating with customers, should be a strong precursor for consumer perceptions of relationship investment. Therefore,

> H_1: A higher perceived level of direct mail leads to a higher perceived level of relationship investment.

Preferential treatment. We define preferential treatment as a consumer's perception of the extent to which a retailer treats and serves its regular customers better than its nonregular customers (e.g., Gwinner, Gremler, and Bitner 1998). For example, account holders at major shops are sometimes offered special shopping evenings or preferential access to certain products for sale. Sheth and Parvatiyar (1995, p. 264) recognize that "implicit in the idea of relationship marketing is consumer focus and consumer selectivity—that is, all consumers do not need to be served in the same way." O'Brien and Jones (1995) criticize companies for inadvertently treating all customers as equal; by not differentiating, companies waste resources in oversatisfying less profitable customers while undersatisfying more valuable, loyal customers Peterson (1995) argues that distinctive treatment enables a seller to address a person's basic human need to feel important. Thus, we expect to demonstrate that a stronger perception of preferential treatment leads to a higher perceived level of relationship investment made by the retailer. Accordingly,

> H_2: A higher perceived level of preferential treatment leads to a higher perceived level of relationship investment.

Interpersonal communication. We define interpersonal communication as a consumer's perception of the extent to which a retailer interacts with its regular customers in a warm and personal way (e.g., Metcalf, Frear, and Krishnan 1992). Interpersonal communication differs from preferential treatment in that the former refers to the personal touch in communication between a store and its customers and the latter emphasizes that regular customers receive a higher service level than nonregular customers. The importance of personal exchanges between consumers and retailers in influencing relationship outcomes should not be surprising given that relationships are inherently social processes (Beatty et al. 1996). For example, almost five decades ago, Stone (1954) highlighted the importance of social exchange in recognizing the existence of shoppers who appreciate personal contact in the store. Evans, Christiansen, and Gill (1996, p. 208) state that the social interaction afforded by shopping has been suggested to be "the prime motivator for some consumers to visit retail establishments." Examples of social relationship benefits are feelings of familiarity, friendship, and social support (Berry 1995); personal recognition and use of a customer's name (Howard, Gengler, and Jain 1995); knowing the customer as a person; engaging in friendly conversations; and exhibiting personal warmth (Crosby, Evans, and Cowles 1990). This theorizing is summarized in the following hypothesis:

> H_3. A higher perceived level of interpersonal communication leads to a higher perceived level of relationship investment.

Tangible rewards. We describe tangible rewards as a consumer's perception of the extent to which a retailer offers tangible benefits such as pricing or gift incentives to its regular customers in return for their loyalty. Babin, Darden, and Griffin (1994) refer to a duality of rewards for many human behaviors, the distinction between performing an act to "get something" versus doing so because "you love it." Many marketers focus on the former, providing rewards that rely primarily on pricing incentives and money savings to secure customers' loyalty (Berry 1995; Peterson 1995). Similarly, our construct of tangible rewards implies that customers receive something tangible in return for their loyalty. Examples of tangible rewards marketers provide as a means of appreciating customers' patronage are frequent flyer miles, customer loyalty bonuses, free gifts, and personalized cents-off coupons (Peterson 1995). Also, trying to earn points—on such things as hotel stays, movie tickets, and car washes—helps customers remain loyal, regardless of service enhancement or price promotions of competitors (Sharp and Sharp 1997). Therefore, we formulate the following:

> H_4: A higher perceived level of tangible rewards leads to a higher perceived level of relationship investment

Relationship Quality

The choice of relationship quality as a relationship outcome in our study is consistent with previous studies on relationship marketing (e.g., Kumar, Scheer, and Steenkamp 1995). Relationship quality can be considered an overall assessment of the strength of a relationship (Garbarino and Johnson 1999; Smith 1998). Previous research conceptualizes relationship quality as a higher-order construct consisting of several distinct, though related, dimensions (e.g., Dorsch, Swanson, and Kelley 1998; Kumar, Scheer, and Steenkamp 1995). Although there still exists discussion on which dimensions make up relationship quality, prior conceptualizations mainly emphasize the critical importance of relationship satisfaction, trust, and relationship commitment as indicators of relationship quality. For example, Crosby, Evans, and Cowles (1990) and Dwyer, Schurr, and Oh (1987) consider relationship satisfaction and trust to be indicators of the higher-order construct of relationship quality. Hennig-Thurau and Klee (1997), Leuthesser (1997), and Dorsch, Swanson, and Kelley (1998) further argue to add relationship commitment as a dimension of relationship quality. Therefore, we assume that a better-quality relationship is accompanied by a greater satisfaction, trust, and commitment. We prefer the abstract relationship quality construct over its more specific dimensions because, even though these various forms of attitude may be conceptually distinct, consumers have difficulty making fine distinctions between them and tend to lump them together (Crosby, Evans, and Cowles 1990). Next, we briefly elaborate on the dimensions of relationship quality.

Relationship satisfaction. Satisfaction with the relationship is regarded as an important outcome of buyer–seller relationships (Smith and Barclay 1997). We define relationship satisfaction as a consumer's affective state resulting from an overall appraisal of his or her relationship with a retailer (Anderson and Narus 1990). Thus, we conceptualize relationship satisfaction as an affective state (Smith and Barclay 1997) in contrast with more rational outcomes (Anderson and Narus 1990). In addition, we view it as a cumulative effect over the course of a relationship compared with satisfaction that is specific to each transaction (Anderson, Fornell, and Rust 1997).

Trust. The development of trust is thought to be an important result of investing in dyadic buyer–seller relationships (e.g., Gundlach, Achrol, and Mentzer 1995). Drawing on the existing literature (e.g., Morgan and Hunt 1994), we define trust as a consumer's confidence in a retailer's reliability and integrity. Several scholars consider perceived trustworthiness and trusting behaviors as two distinct, though related, aspects of trust. Whereas trustworthiness refers to a belief or confidence, trusting behaviors are related to the willingness to engage in risk-taking behavior, reflecting a reliance on a partner (Smith and Barclay 1997). Although some scholars merge both aspects into one definition of trust (e.g., Moorman, Desphandé, and Zaltman 1993), others claim that trustworthiness is a necessary and sufficient condition for trust to exist (e.g., Anderson and Narus 1990). In line with the latter group, our definition encompasses only the notion of trustworthiness.

Relationship commitment. Commitment is generally regarded to be an important result of good relational interactions (Dwyer, Schurr, and Oh 1987). In our study, we define relationship commitment as a consumer's enduring desire to continue a relationship with a retailer accompanied by this consumer's willingness to make efforts at maintaining it (e.g., Morgan and Hunt 1994). Note that the definition implies the presence and consistency over time of both the desire to continue a relationship and the willingness to make efforts directed at sustaining this relationship (Macintosh and Lockshin 1997). We believe that the desire for continuity is a necessary but insufficient condition for relationship commitment because, for example, it might be driven simply by habitual cues or marketplace constraints. As a result, our measures of commitment incorporate both aspects.

The association between relationship investment and relationship quality has rarely been investigated empirically. A notable exception is the strong support Crosby, Evans, and Cowles (1990) find for a positive path from relational selling behavior to relationship quality. Furthermore, Wray, Palmer, and Bejou (1994) find evidence for a positive relationship between a salesperson's customer orientation and relationship quality. Finally, Lagace, Dahlstrom, and Gassenheimer (1991) find a positive path from ethical salesperson behavior to relationship quality. Although these constructs are not completely similar to our construct of relationship investment, they provide an initial basis for our next hypothesis.

Stronger evidence can be found for the impact of relationship investment on the dimensions of relationship quality. Relationship investment has been shown to predict satisfaction in business marketing relationships (e.g., Anderson and Narus 1990; Ganesan 1994; Smith and Barclay 1997). Customers tend to be more satisfied with sellers who make deliberate efforts toward them (Baker, Simpson, and Siguaw 1999). Also, trust has been shown to be resulting from relationship investment. For example, Ganesan (1994) finds that specific investments made by one partner result in increased trust. With respect to commitment, Dwyer, Schurr, and Oh (1987, p. 19) suggest that commitment is "fueled by the ongoing benefits accruing to each partner." In line with this, Bennett (1996) argues that the strength of customers' commitment depends on their perceptions of efforts made by the seller. Furthermore, several authors have empirically investigated the relationship between relational performance, a construct that shows similarities to relationship investment, and relationship commitment (Anderson and Weitz 1992; Baker, Simpson, and Siguaw 1999; Morgan and Hunt 1994). Therefore, we suggest the following:

> H_5: A higher perceived level of relationship investment leads to a higher level of relationship quality.

Behavioral Loyalty

Models that theorize attitudinal as well as behavioral relationship outcomes have strong precedence in relationship studies (e.g., Bolton 1998; Macintosh and Lockshin 1997). Accordingly, we build on existing literature, which states that the effectiveness of relationship marketing tactics should also be evaluated in terms of the behavioral changes they create (Sharp and Sharp 1997). As a result, we included the construct of behavioral loyalty, defined as a composite measure based on a consumer's purchasing frequency and amount spent at a retailer compared with the amount spent at other retailers from which the consumer buys. In other words, behavioral loyalty is measured as a unique combination of behavioral indicators, concordant with suggestions made by Sirohi, McLaughlin, and Wittink (1998) and Pritchard, Havitz, and Howard (1999).

Hennig-Thurau and Klee (1997) argue that relationship quality is an antecedent of repeat purchase behavior. Furthermore, some empirical evidence has been found for relationships between dimensions of relationship quality and behavioral loyalty. With respect to satisfaction as a dimension of relationship quality, Bolton (1998) and Macintosh and Lockshin (1997) find positive paths from relationship satisfaction to both relationship duration and purchase intentions, which can be considered behavioral indicators of loyalty. Regarding trust as a relationship quality dimension, Smith and Barclay (1997), for example, report a positive effect of trust on forbearance from opportunism. Moorman, Desphandé, and Zaltman (1993) suggest that customers who are committed to a relationship might have a greater propensity to act because of their need to remain consistent with their commitment. Morgan and Hunt (1994) find empirical support for the relationship between a customer's commitment and acquiescence, propensity to leave, and cooperation, all of which can be regarded as behavioral outcomes of relationships. Derived from these findings, we investigate the following:

> H_6. A higher level of relationship quality leads to a higher level of behavioral loyalty.

Factors Moderating the Effect of Perceived Relationship Investment

In addition to testing for the effects we have described thus far, this article also takes an initial step toward assessing the role of moderators that influence the effectiveness of perceived relationship investment. An examination of such moderators enables marketers to understand when investing in relationships is expected to be more effective or less effective. Not all consumers search for more than the timely exchange of a product or service with a minimum of hassles, so making resource-intensive relationship investments is considered neither appropriate nor necessary for every consumer (Bendapudi and Berry 1997; Christy, Oliver, and Penn 1996; Day 2000). Given our focus on and general interest in the consumer, we investigate whether the effects of perceived relationship investment are contingent on either of two consumer characteristics: product category involvement and consumer relationship proneness.

Product category involvement. In line with Mittal (1995), we define product category involvement as a consumer's enduring perceptions of the importance of the product category based on the consumer's inherent needs, values, and interests. Researchers have suggested that people who are highly involved with a product category reveal a tendency to be more loyal (Dick and Basu 1994; King and Ring 1980). They reason that a relationship can add value only for customers who are already interested in the product. Solomon and colleagues (1985) claim that in low-involvement situations, the treatment of customers as individuals would probably not pay off, whereas in high-involvement situations, customers desire more personal treatment. Gordon, McKeage, and Fox (1998) state that involved buyers are more likely to participate in marketing relationships and to derive value from these relationships. Such relationships may be perceived as invasive or annoying when directed at consumers with lower levels of involvement. Consequently, approaches by the seller, however well-intentioned, could be regarded by the customer as undesirable when the customer's involvement is low (Christy, Oliver, and Penn 1996). We expect the effects of perceived relationship investment to be strengthened in the case of high levels of product category involvement:

> H_7. A higher level of product category involvement strengthens the impact of perceived relationship investment on relationship quality

Consumer relationship proneness Gwinner, Gremler, and Bitner (1998) argue that relationship marketing success may depend not only on its strategy or implementation but also on the preferences of the individual customer. Christy, Oliver, and Penn (1996) use the term "psychologically predisposed" to express the idea that some customers are intrinsically inclined to engage in relationships. However, despite the recognized importance of customers' proneness to engage in relationships with sellers, no study has yet investigated its impact on relationship effectiveness (Sheth and Parvatiyar 1995). In this study, we define consumer relationship proneness as a consumer's relatively stable and conscious tendency to engage in relationships with retailers of a particular product category. Several authors stress that a buyer's proneness to engage in relationships may vary across groups of sellers (Bendapudi and Berry 1997; Christy, Oliver, and Penn 1996) (e.g., apparel stores versus supermarkets), so we postulate that consumer relationship proneness must be defined within a particular product category. In addition, we emphasize consumers' conscious tendency to engage in relationships as opposed to a tendency based more on inertia or convenience (e g., Dick and Basu 1994). From a seller's perspective, investing in relationships with buyers is not always considered a preferable strategy, because not all types of buyers are prone to engage in relationships with sellers (Berry 1995; Crosby, Evans, and Cowles 1990; Sheth and Parvatiyar 1995). We assume that relationship-prone consumers should reciprocate a retailer's efforts more strongly, because by definition, relationship-prone consumers are most likely to develop relationships. Consequently, we test the following:

> H_8: A higher level of consumer relationship proneness strengthens the impact of perceived relationship investment on relationship quality.

Method

Setting

An externally valid, fuller understanding of consumer relationships requires that the validity of conceptual models developed in one setting be examined in other settings as well. Our study is conducted in the food and apparel industries, covering a wide variety of retailers, including discount stores, mass merchandisers, traditional department stores, and prestige stores. We consider these industries similar with respect to the competitiveness of their industry environment and the opportunities for consumers to switch. However, the industries differ on many other dimensions. For example, social features of a relationship might be expected to be more important in an apparel context that is characterized by a high degree of personal contact and advice. Conversely, economic features might play a more important role in relationships between food retailers and consumers who have a strong emphasis on discounts and anonymous self-service. In addition to studying various industries, in response to recent calls for cross-cultural research on relationships (Iacobucci and Ostrom 1996), our study is of a transatlantic nature; it includes respondents not only from the United States but also from two highly developed western European countries, the Netherlands and (the Flemish part of) Belgium. The selection of both European countries was a matter of convenience. To the best of our knowledge, this is the first study on consumer relationships that compares survey data from three different countries. According to Hofstede's (1980) classification of countries according to cultural dimensions (power distance, uncertainty avoidance, individualism, and masculinity), large-scale differences exist among these dimensions across the three countries. The power distance scores for the United States, the Netherlands, and Belgium are, respectively, 40, 38, and 65; uncertainty avoidance: 46, 53, and 94; individualism: 91, 80, and 75; and masculinity: 62, 14, and 54. In addition, significant variations in competitive conditions and legal environments among the three countries are prevalent. In conclusion, the settings incorporated in our study differ greatly from one another, which should provide a fertile environment for conducting a true cross-validation.

Measure Development

Measures for some of the constructs we are examining were available in the literature, though most were adapted to suit a retail environment. For the four relationship marketing tactics, relationship investment, and consumer relationship proneness, scales applicable to a retail context were not available and were developed for the purpose of this study. First, focus groups were used to examine how consumers described relationship investment, relationship marketing tactics, and relationship proneness. Four focus groups were organized in which participants were asked open-ended questions about their own behavior with respect to shopping for clothing. Then, direct questions were posed to acquire knowledge on relationship investment, relationship marketing tactics, and relationship proneness. Finally, projective techniques were used during the remainder of the discussions (i.e., depth descriptions, photosorts). Participants received a monetary incentive in return for their cooperation. The results were helpful in generating items.

Second, in an effort to enhance face validity, a group of Dutch and Belgian expert judges (four academics and three practitioners) qualitatively tested an initial pool of items intended to measure various relationship marketing tactics. Experts were provided with the definitions of the relationship marketing tactics and were asked to classify each item to the most appropriate tactic. Items that were improperly classified were reformulated or deleted. Third, equivalence for all items was sought by conducting back-translation A U.S.-born

American citizen who was fluent in Dutch first translated the original Dutch version of the questionnaire into American English, and a native Dutch speaker who was fluent in American English then retranslated the questionnaire into Dutch. The quality of the English translation was evaluated by a monolinguistic, U.S.-born American citizen on clarity and comprehensiveness of the translated questionnaire. The Dutch questionnaire was used in the Dutch as well as in the Belgian sample (covering the Flemish part of Belgium).

Finally, 12 graduate students in marketing research (4 in each country) were instructed to pretest a questionnaire that included all constructs on a total sample of 60 consumers through personal in-home interviews. Items measuring the various constructs were mixed in the questionnaire to reduce halo effects. To ensure that respondents were distributed across age, sex, and country, students were assigned to particular combinations of quota criteria and were allowed to select respondents who matched these criteria (e.g., friends, family, neighbors). They asked respondents to complete the questionnaire and then describe the meaning of each question, explain their answers, and state any problems they encountered while answering questions. Small revisions to the U.S. and Dutch/Belgian version of the questionnaire were made on basis of the pretest.

Final Measures

Final attempts at measure purification were conducted on a sample (n = 371) drawn to resemble the eventual multi-country, multi-industry sample. We factored the items to investigate whether they correctly measured their intended constructs. Theoretically, it was likely that the latent constructs would be correlated, so we applied an oblique rotation. We only retained items that minimally loaded .65 on the proper latent factor and maximally loaded .30 on the others to enhance the distinctiveness of the intended constructs. The resulting measurement appeared to be clean across scales, countries, and industries The Appendix contains all (seven-point Likert) scales, organized by construct. Moreover, Table 1 provides an overview of construct means, standard deviations, and correlations.

With respect to relationship satisfaction, trust, and relationship commitment, we first factor-analyzed these multi-item scales for each construct separately; across all samples, a single factor emerged in each case. As Cronbach's alpha values ranged between .70 and .93, reliability was uniformly high in all samples for all three constructs. Then we assessed the second-order factor model with the first-order factors (relationship satisfaction, trust, and relationship commitment) that originated from the higher-order factor relationship quality.[2] These measurement results were acceptable in each sample (comparative fit index [CFI] and nonnormed fit index [NNFI] ranged from .93 to .97 for CFI and from 89 to .96 for NNFI). All first-order and second-order factor loadings were significant, demonstrating convergent validity. This provided us with enough confidence to calculate averages for relationship satisfaction, trust, and relationship commitment based on the three items of each construct and use these averages as indicators of the construct relationship quality (see Crosby, Evans, and Cowles 1990; Posdakoff and Mackenzie 1994).

Samples

Information was collected from real consumers as opposed to student samples. Mall-intercept personal interviews were administered in the United States (food: n = 231, apparel: n = 230), the Netherlands (food: n = 337, apparel: n = 338), and Belgium (food: n = 289, apparel: n = 302). Samples were drawn from shopping mall visitors to obtain variance in age (18 to 25 years, 26 to 40 years, 41 to 55 years, and 55 years and over), sex, and allocated share of wallet for the store reported on (0%–20%, 21%–40%, 41%–60%, 61%–80%, and 81%–100%). We also sought even coverage over interviewing time of day and interviewing day of week to reduce possible shopping pattern biases Across our samples, an average of 37% of the visitors who were approached participated.

Procedure

Participants were first asked whether they had ever made a purchase in the particular product category. If so, they were asked to indicate the names of five stores at which they usually bought food or apparel. Next, respondents indicated their approximate share of wallet for each store listed (measured on a continuous scale from 0% to 100%) and the extent to which they believed they were regular customers of each store (measured on a scale from 1 to 7). Finally, the interviewers selected a specific store to focus on for the remaining questions on the basis of the reported share of wallet figures. Care was taken that respondents reporting low, medium, and high levels of share of wallet were represented in each sample. By definition, a relationship is of extended duration and composed of multiple interactions, so many of the costs and benefits from buyer–seller relationships cannot be assessed a priori (Dwyer, Schurr, and Oh 1987; Parasuraman 1997). Gwinner, Gremler, and Bitner (1998) state that though customers may receive relationship benefits and believe that these benefits are important, they may not always be aware of these benefits' existence in the early stages of a relationship and may not have assessed their value yet. Therefore, only those stores were included for which respondents indicated at least a 4 on the 7-point scale that measured "being a regular customer of the store." To enhance interrater reliability, the cover letter attached to the questionnaire explained the term "regular customer" to respondents as "a customer who regularly buys clothes/food in a store and not simply visits the store to look around."

Results

Examination of Data Pooling

To decide whether we needed to estimate separate models for each sample, we investigated the possibility of pooling data across countries and/or industries by means of several multigroup LISREL analyses. To assess pooling of industry samples, we evaluated two nested models for each country: (1) a model in which all structural paths were set equal across the two industry samples (equal model) and (2) a model in which all structural paths were set free across the

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[2] On request, the authors can report the detailed results on the factor analysis, reliability scores, and the second-order factor model.

TABLE 1
Means, Standard Deviations, and Correlations

	Food		Apparel		Correlation Matrix									
United States	Mean	Standard Deviation	Mean	Standard Deviation	1	2	3	4	5	6	7	8	9	10
1. Direct mail	4.22	1.42	4.96	1.68	1.00	.59**	.57**	.79**	.54**	.47**	.53**	.40**	.34**	.15*
2. Preferential treatment	3.71	1.36	4.15	1.54	.55**	1.00	.70**	.71**	.45**	.52**	.56**	.38**	.45**	.27**
3. Interpersonal communication	4.16	1.40	4.30	1.60	.64**	.64**	1.00	.67**	.55**	.63**	.66**	.48**	.55**	.23**
4. Tangible rewards	3.81	1.39	4.42	1.69	.64**	.78**	.65**	1.00	.54**	.58**	.62**	.48**	.45**	.17**
5. Perceived relationship investment	5.17	1.19	5.29	1.24	.53**	.44**	.66**	.47**	1.00	.65**	.72**	.50**	.53**	.27**
6. Relationship quality	4.97	1.14	5.15	1.14	.45**	.46**	.59**	.41**	.60**	1.00	.92**	.87**	.92**	.43**
7. Relationship satisfaction	4.85	1.21	5.05	1.31	.47**	.49**	.64**	.46**	.62**	.93**	1.00	.70**	.77**	.36**
8. Trust	5.42	1.09	5.37	1.14	.29**	.30**	.42**	.25**	.51**	.87**	.72**	1.00	.70**	.25**
9. Relationship commitment	4.63	1.44	5.04	1.33	.45**	.45**	.55**	.41**	.52**	.94**	.82**	.71**	1.00	.52**
10. Behavioral loyalty	.00	.94	.00	.88	.03	.10	.14*	.10	.21**	.39**	.32**	.38**	.37**	1.00

The Netherlands	Mean	Standard Deviation	Mean	Standard Deviation	1	2	3	4	5	6	7	8	9	10
1. Direct mail	3.53	1.58	3.71	2.06	1.00	.50**	.22**	.34**	.48**	.40**	.43**	.26**	.33**	.07
2. Preferential treatment	3.00	1.31	3.34	1.45	.32**	1.00	.36**	.57**	.46**	.32**	.37**	.20**	.25**	.07
3. Interpersonal communication	2.74	1.45	3.63	1.83	.40**	.42**	1.00	.48**	.52**	.57**	.62**	.41**	.43**	.27**
4. Tangible rewards	3.90	1.60	3.54	1.81	.30**	.49**	.29**	1.00	.53**	.47**	.54**	.29**	.36**	.16**
5. Perceived relationship investment	5.02	1.33	4.94	1.44	.25**	.30**	.27**	.28**	1.00	.68**	.71**	.54**	.50**	.24**
6. Relationship quality	4.80	1.06	5.17	1.07	.28**	.12*	.38**	.20**	.59**	1.00	.91**	.82**	.86**	.36**
7. Relationship satisfaction	4.64	1.25	4.86	1.39	.34**	.18**	.46**	.26**	.51**	.87**	1.00	.68**	.65**	.25**
8. Trust	5.46	1.02	5.73	.95	.17**	.06	.18**	.14**	.56**	.82**	.64**	1.00	.54**	.29**
9. Relationship commitment	4.29	1.44	4.92	1.35	.20**	.07	.31**	.11*	.46**	.87**	.60**	.54**	1.00	.39**
10. Behavioral loyalty	.00	.91	.00	.83	–.09	–.08	–.04	.03	.18**	.22**	.11*	.17**	.26**	1.00

Belgium	Mean	Standard Deviation	Mean	Standard Deviation	1	2	3	4	5	6	7	8	9	10
1. Direct mail	4.83	1.65	3.42	1.95	1.00	.29**	.29**	.52**	.41**	.30**	.34**	.19**	.22**	.07
2. Preferential treatment	2.97	1.54	3.04	1.41	.16**	1.00	.44**	.44**	.34**	.28**	.33**	.15*	.20**	.05
3. Interpersonal communication	2.50	1.55	2.49	1.46	.04	.55**	1.00	.47**	.32**	.31**	.34**	.11	.30**	.15**
4. Tangible rewards	3.86	1.76	3.06	1.73	.46**	.48**	.27**	1.00	.39**	.19**	.25**	.08	.12*	.03
5. Perceived relationship investment	4.72	1.44	4.45	1.48	.38**	.36**	.23**	.53**	1.00	.39**	.35**	.24**	.36**	.18**
6. Relationship quality	4.85	1.07	5.10	.94	.32**	.28**	.24**	.28**	.49**	1.00	.86**	.81**	.85**	.29**
7. Relationship satisfaction	4.81	1.25	4.93	1.18	.38**	.34**	.29**	.33**	.49**	.89**	1.00	.60**	.55**	.14*
8. Trust	5.44	1.04	5.55	.90	.35**	.14*	.05	.23**	.44**	.83**	.67**	1.00	.53**	.23**
9. Relationship commitment	4.30	1.43	4.81	1.26	.13*	.22**	.23**	.17**	.36**	.87**	.62**	.55**	1.00	.35**
10. Behavioral loyalty	.00	.92	.00	.84	.17**	.02	.03	.11	.27**	.34**	.29**	.29**	.31**	1.00

*$p < .05$ (two-sided).

**$p < .01$ (two-sided).

Notes. Correlations above the diagonal are for the apparel samples; those below the diagonal are for the food samples.

TABLE 2
Overall Model Fits

	Food			Apparel		
Fit Statistics	**United States**	**Netherlands**	**Belgium**	**United States**	**Netherlands**	**Belgium**
$\chi^2_{(177)}$	428.44	458.13	355.49	457.21	390.73	373.51
χ^2/d.f.	2.42	2.59	2.01	2.58	2.21	2.11
GFI	.85	.88	.89	.83	.90	.89
AGFI	.80	.84	.86	.78	.87	.86
RMSEA	.079	.072	.061	.087	.058	.060
SRMR	.073	.072	.061	.073	.054	.060
NNFI	.93	.90	.94	.92	.95	.93
CFI	.94	.92	.95	.93	.95	.94

Notes: GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index.

two industry samples (free model). We followed the same procedure to assess pooling of country samples. With respect to pooling across industries, the free model in the Dutch sample obtained a significantly better fit than the equal model, which indicates that not all of the paths were equal across apparel and food. With respect to pooling across countries, the differences between the equal and free models were statistically significant for four of six country comparisons. Therefore, we decided not to pool the data across countries or industries.

Overall Model Evaluation

In Table 2, we report the values of the fit statistics. The chi-squares are all significant ($p < .05$; Bollen 1989), a finding not unusual with large sample sizes (Doney and Cannon 1997). The ratios of chi-square to degrees of freedom (d.f.) are between 2.01 and 2.59, all within the acceptable range of 2 to 5 (Marsh and Hovecar 1985). The values for CFI, NNFI, root mean square error of approximation (RMSEA), and standardized root mean residual (SRMR) are acceptably close to the standards suggested by Hu and Bentler (1999): .95 for CFI and NNFI, .06 for RMSEA, and .08 for SRMR. Given that these batteries of overall goodness-of-fit indices were accurate and that the model was developed on theoretical bases, and given the high level of consistency across samples, no respecifications of the model were made. This enables us to proceed in evaluating the measurement and structural models.

Measurement Model Evaluation

In Table 3, we report the results of the measurement models. We assessed the quality of our measurement efforts by investigating unidimensionality, convergent validity, reliability, discriminant validity, and metric equivalence. Evidence for the unidimensionality of each construct included appropriate items that loaded at least .65 on their respective hypothesized component and loaded no larger than .30 on other components in a factor analysis. In addition, the overall goodness of fit supports unidimensionality (Steenkamp and van Trijp 1991). Convergent validity was supported by all loadings being significant ($p < .01$) and nearly all R^2 exceeding .50 (Hildebrandt 1987). We assessed reliability jointly for all items of a construct by computing the composite reliability and average variance extracted (Baumgartner and Homburg 1996; Steenkamp and van Trijp 1991). For a construct to possess good reliability, composite reliability should be between .60 and .80, and the average variance extracted should at least be .50 (Bagozzi and Yi 1988). All scales demonstrate good reliabilities.

We tested discriminant validity by means of several subsequent procedures. First, as a basic test of discriminant validity, we checked whether correlations among the latent constructs were significantly less than 1. In all samples, construct correlations indeed met this criterion. Second, we compared a series of nested confirmatory factor models in which correlations between latent constructs were constrained to 1 (each of the 21 off-diagonal elements was constrained and the model reestimated in turn), and indeed chi-square differences were significant for all model comparisons ($p < .01$) in all samples, again in support of discriminant validity. Third, we performed a stronger test for discriminant validity provided by Fornell and Larcker (1981) This test suggests that a scale possesses discriminant validity if the average variance extracted by the underlying construct is larger than the shared variance (i.e. the squared intercorrelation) with other latent constructs. On the basis of this most restrictive test, we found strong evidence for discriminant validity between each possible pair of latent constructs in all samples (i.e., all pairs of seven factors in all three countries in both industries). Only two exceptions were found. In the U.S. food sample, the squared intercorrelation between preferential treatment and tangible rewards (.79) was larger than the shared variance extracted by both constructs (.76 and .69, respectively). In the Dutch apparel sample, the squared intercorrelation between relationship investment and relationship quality (.67) was larger than the shared variance extracted by relationship quality (.63). However, given that neither problem occured in the other five samples, we do not consider this a major problem.

Finally, to cross-nationally investigate the interrelationships between constructs in a nomological net, Steenkamp and Baumgartner (1998) indicate that full or partial metric invariance must be satisfied because the scale intervals of the latent constructs must be comparable across countries. We assessed metric invariance by comparing two nested models for each construct separately in terms of the difference in chi-square relative to degrees of freedom, RMSEA, NNFI, and CFI.[3] In the first model (base model), all error variances

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[3] On request, the authors can report the detailed results on the tests for full or partial metric invariance

TABLE 3
Measurement Models

	Composite Reliability						Percentage of Variance Explained					
	Food			Apparel			Food			Apparel		
Construct	United States	Netherlands	Belgium	United States	Netherlands	Belgium	United States	Netherlands	Belgium	United States	Netherlands	Belgium
Direct mail	.89	.76	.83	.93	.94	.93	.73	.51	.63	.82	.84	.82
Preferential treatment	.90	.79	.91	.89	.86	.86	.76	.57	.77	.73	.67	.68
Interpersonal communication	.89	.87	.89	.90	.87	.83	.73	.69	.73	.74	.72	.61
Tangible rewards	.87	.80	.80	.91	87	.86	.69	.57	.57	.77	.69	.68
Perceived relationship investment	.92	.86	.89	.93	.90	.87	.79	.69	.73	.81	.74	.68
Relationship quality	.90	.79	.79	.88	.83	.78	.75	.57	.57	.72	.63	.55
Behavioral loyalty	.94	.90	.85	.85	.77	.79	.83	.75	.66	.66	.53	.56

and all factor loadings were allowed to be free across samples. (One marker item was selected, and the same marker item was used in each sample.) Only the factor variance of the latent construct was constrained to be equal across samples. (We measured each latent construct on basis of three indicators, so at least one parameter should be fixed across samples to generate a nonsaturated model.) In the second model (equal loadings model), we additionally constrained the remaining two factor loadings (apart from the marker item) to be equal across the six samples. While metric invariance is "a reasonable ideal..., a condition to be striven for, not one expected to be fully realized" (Horn 1991, p. 125), our measurement model supported full metric invariance for three of seven constructs incorporated. For constructs not revealing full metric invariance (direct mail, interpersonal communication, tangible rewards, and relationship commitment), we sequentially relaxed constraints on parameters to test for partial metric invariance. Partial metric invariance was supported for all remaining constructs.

In summary, the measurement models are clean, with evidence for unidimensionality, convergent validity, reliability, discriminant validity, and metric invariance, which enabled us to proceed to the structural model evaluation.

Structural Model Evaluation

Table 4 indicates that in each sample, all significant relationships between latent constructs are in the hypothesized direction, which provides initial evidence for our conceptual model and supports the nomological validity of the constructs. An important finding is that the relationship between perceived relationship investment and relationship quality and the positive path from relationship quality to behavioral loyalty are confirmed across all samples. This result provides strong empirical evidence for the cross-validation of this part of our conceptual model, which is especially noteworthy given that the countries examined differ considerably on demographic, economic, and cultural dimensions. Consequently, there was strong and uniform support for H_5 and H_6.

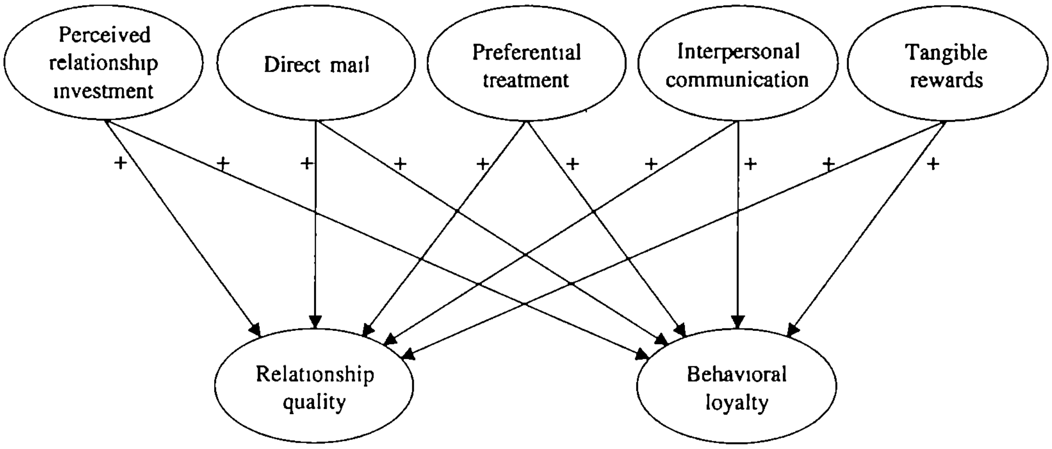
In examining H_1–H_4, which explicate the associations between relationship marketing tactics and perceived relationship investment, only in the United States is there a consistent pattern of effects across the two industries. In addition, only for preferential treatment in the food industry and for interpersonal communication in the apparel industry is there a consistent pattern of effects across the three countries. Apart from these effects, the data provided mixed evidence. Specifically, direct mail had a positive impact on perceived relationship investment (H_1) in three of four European samples as opposed to the U.S. samples, in which no significant paths were detected. Preferential treatment revealed a nonsignificant relationship with perceived relationship investment (H_2) in all samples except for the Belgian apparel sample. Interpersonal communication had the strongest impact on perceived relationship investment (H_3), being cross-validated in all samples except for the Belgian food sample. Finally, the data support a positive path from tangible rewards to perceived relationship investment (H_4)

TABLE 4
Structural Models

	Estimate (Standard Error)					
	Food			Apparel		
Hypothesized Path	United States	Nether-lands	Belgium	United States	Nether-lands	Belgium
H_1: Direct mail → perceived relationship investment (+)	.09 (.09)	.08 (.08)	.16* (.07)	.22 (.14)	.27** (.06)	.28** (.07)
H_2: Preferential treatment → perceived relationship investment (+)	–.10 (.16)	.04 (.10)	.08 (.09)	–.11 (.12)	.09 (.07)	.15* (.07)
H_3: Interpersonal communication → perceived relationship investment (+)	.74** (.12)	.19** (.08)	.08 (.08)	.42** (.11)	.40** (.06)	.16* (.08)
H_4: Tangible rewards → perceived relationship investment (+)	.02 (.18)	.24** (.09)	.47** (.10)	.18 (.20)	.18** (.08)	.12 (.09)
H_5: Perceived relationship investment → relationship quality (+)	.68** (.08)	.72** (.08)	.61** (.08)	.76** (.08)	.82** (.08)	.48** (.07)
H_6: Relationship quality → behavioral loyalty (+)	.41** (.07)	.21** (.06)	.40** (.07)	.46** (.08)	.36** (.07)	.33** (.07)
Squared Multiple Correlations for Structural Equations						
Perceived relationship investment	.44	.18	.41	.44	.55	.31
Relationship quality	.46	.52	.37	.58	.68	.23
Behavioral loyalty	.17	.04	.16	.21	.13	.11

*$p < .05$ (one-sided).
**$p < .01$ (one-sided).

FIGURE 2
Rival Model



in three of four European samples but do not provide evidence for this path in the U.S. samples.

We now turn to two model modifications: First, we test a rival structural model to enhance our confidence in the focal model further, and second, we introduce the potential moderators of product category involvement and consumer relationship proneness, in accordance with our prior theorizing.

A Rival Model

It is generally agreed that researchers should compare rival models and not just test the performance of a proposed model (Bagozzi and Yi 1988). In discussing the construct of perceived relationship investment previously, we provided a theoretical basis for positioning perceived relationship investment as a mediating variable. Because our parsimonious hypothesized model allows no direct paths from any of the four relationship marketing tactics to relationship quality or to behavioral loyalty, it implies a central nomological status for relationship investment. A nonparsimonious rival model would hypothesize only direct paths from each of the precursors to the outcomes relationship quality and behavioral loyalty. This model makes relationship investment nomologically similar to the four relationship marketing tactics. The tested rival model (see Figure 2) therefore permits no indirect effects, implying that relationship investment is not allowed to mediate any of the relationships.

On the basis of Morgan and Hunt (1994), we compared our hypothesized model with the rival model on the following criteria:[4] overall fit, parsimony, percentage of either model's parameters that were statistically significant, and R^2s for the endogenous constructs. With respect to overall fit, the average CFI of the rival model was slightly higher than that of the hypothesized model (.947 versus .938), and the rival model's mean ratio of chi-square to degrees of freedom was slightly lower than that of the hypothesized model (2.24 versus 2.32). Note, however, that to achieve this slight increase in fit, we needed to estimate four additional paths in the rival model, which reduced the rival model's parsimony and partially offset the incremental improvement in fit. In addition, only 47% of the paths in the rival model were significant as opposed to 67% in the hypothesized model, which suggested that the additional paths were not meaningful theoretically or empirically. Finally, the average explained variance of relationship quality was .56 in the rival model as opposed to .47 in the hypothesized model. This is not surprising because in addition to relationship investment, as a precursor of relationship quality, four extra antecedents were modeled to explain relationship quality in the rival model. In contrast, the average explained variance of behavioral loyalty was only .12 in the rival model as opposed to .14 in the hypothesized model. This means that the explanatory power of relationship quality as a single antecedent of behavioral loyalty is stronger than the combined explanatory power of the four relationship marketing tactics plus relationship investment.

On the basis of these findings, we believe that the exercise of fitting a rival model has strengthened the support we found for the meaningfulness and robustness of our hypothesized model. In addition to the conceptual support found for positioning perceived relationship investment as a mediating variable in the hypothesized model, the rival model empirically demonstrates its added value. Neglecting the mediating role of this construct reduces its parsimony and results in a lower percentage of significant path coefficients.

Moderating Influences

We tested moderating effects through multigroup analyses, splitting the samples into subsamples according to whether consumers scored high or low on the moderating variables to ensure within-group homogeneity and between-group heterogeneity. The subgroup method is a commonly preferred technique for detecting moderating effects (Stone and Hollenbeck 1989). For each moderator, Table 5 displays the results for 12 separate structural model estimations in terms of chi-square and degrees of freedom.

Moderating influence of product category involvement. Considering product category involvement as a moderator,

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[4] On request, the authors can report the detailed results on the rival model

TABLE 5
Moderating Influences

		Food			Apparel		
Moderator: Product Category Involvement		**United States**	**Nether-lands**	**Belgium**	**United States**	**Nether-lands**	**Belgium**
Equal model	d.f.	405	405	405	405	405	405
	χ^2	742.07	782.86	674.91	794.60	758.81	653.99
H_7: Perceived relationship investment → relationship quality: free	d.f.	404	404	404	404	404	404
	χ^2	735.97	782.84	674.88	781.45	754.51	653.60
	$\Delta\chi^2$	6.10*	.02	.03	13.15**	4.30*	.39
Moderator: Consumer Relationship Proneness							
Equal model	d.f.	405	405	405	405	405	405
	χ^2	844.85	690.03	664.47	855.85	770.40	741.29
H_8: Perceived relationship investment → relationship quality: free	d.f.	404	404	404	404	404	404
	χ^2	833.58	689.92	656.50	851.17	769.42	741.18
	$\Delta\chi^2$	11.27**	.11	7.97**	4.68*	.98	.11

*$p < .05$ (one-sided).
**$p < .01$ (one-sided).

in the equal models, we set all paths of the structural model equal across high– and low–product category involvement subsamples. In the free models, we constrained all paths to be equal across high– and low–product category involvement subsamples, except for the link that was potentially affected by the moderator variable. Differences in chi-square values between models determine whether product category involvement acts as a moderating variable; that is, a significant decrease in chi-square from the equal model to a model in which one relationship is set free implies that the moderator variable has a significant influence on that relationship. Table 5 reveals that the level of product category involvement significantly moderates the impact of perceived relationship investment on relationship quality in three samples (U.S. food, U.S. apparel, and Dutch apparel). For relationships that were moderated, the within-group path coefficients were consistently lower in the low-involvement than the high-involvement subsample. The following differences in path coefficients were found for the link from perceived relationship investment to relationship quality: U.S. food +.19, U.S. apparel +.23, and Dutch apparel +.09. In conclusion, for some industry–country combinations, our data suggest that investing in a relationship generates a higher payoff in terms of increased relationship quality when customers are more involved with the product category. These findings tentatively support H_7.

Moderating influence of consumer relationship proneness. We used the same procedure to assess the moderating impact of consumer relationship proneness. The results show that consumer relationship proneness significantly moderates the impact of perceived relationship investment on relationship quality in three samples (U.S. food, U.S. apparel, and Belgian food). For relationships that were moderated, within-group path coefficients were consistently lower in the low–relationship proneness than the high–relationship proneness subsample. The following differences in path coefficients were found for the link from perceived relationship investment to relationship quality: U.S. food +.30, U.S. apparel +.15, and Belgian food +.30. These findings suggest that the impact of perceived relationship investment may be stronger when customers are more prone to engage in relationships with sellers. These results provide preliminary support for H_8.

Discussion and Implications

The development and sustainability of loyalty is increasingly difficult to achieve and is still surrounded with ambiguity regarding its underlying determinants, so we believe that our research makes a significant contribution to relationship marketing theory in three different ways. First, our model contributes to the existing literature by specifying how retailers can guide consumer perceptions of relationship investment by applying four different relationship marketing tactics. Prior studies have rarely investigated the role of such tactics in shaping consumer relationships. Second, our study demonstrates why retailers benefit from investing in consumer relationships by assessing the impact of perceived relationship investment on relationship quality and ultimately on behavioral loyalty. Third, this study is a first attempt to provide insights into the role of contingency factors in determining relationship quality by emphasizing the moderating impact of a newly introduced construct, consumer relationship proneness, and product category involvement. We tested these three research questions comprehensively and rigorously by replicating the study across three countries and two industries.

With respect to our first research question, relationship marketing tactics were found to play a differential yet consistently positive role in affecting perceived relationship investment. Today's retailers increasingly offer comparable merchandise, copy competitors' price promotions, share common distribution systems, and treat customers well in terms of services offered, so there are increased opportunities for directing greater attention to developing and implementing relationship marketing tactics. With respect to the direct mail tactic, we found mixed evidence for its positive effect on perceived relationship investment. Most strikingly, no empirical support was found for positive effects of direct mail in the United States. A likely explanation for this finding is that the longer tradition of sending direct mail to regular customers in affluent U.S. markets has worn out its effect on perceived relationship investment. Whereas in the United States, direct marketing expenditures constituted 57.8% of total advertising expenditures in 1997 (DMA/WEFA 1998), these percentages were significantly lower in the Netherlands and Belgium during the same period: 47.4% and 38.9%, respectively (FEDMA 1998). This is illustrated by the difference across countries in the number of direct mail pieces received per capita. The average number of U.S. direct mail pieces received over the past 50 years has risen from approximately 145 pieces per year to more than 700 per year (James and Li 1993). In 1997, Dutch consumers received an average of only 81.7 pieces of addressed direct mail, and Belgian consumers found an average of 110.1 pieces of addressed mail in their mailbox (FEDMA 1998).

Interpersonal communication proved to be a dominant determinant of perceived relationship investment, being replicated in five out of six samples, an observation that is sensible given that relationships are inherently social. It demonstrates the crucial role of retail employees who are in direct contact with customers. Retailers capable of training and motivating their employees to show warm and personal feelings toward customers can reap the resulting benefits in terms of improved perceptions of relationship investment. Also, when hiring store personnel, store management needs to focus on candidates' social abilities that facilitate social interactions with target consumers (Weitz and Bradford 1999). This is especially important, because the emergence of automated retailing has gradually reduced opportunities for social interaction in the store. Retailers should investigate whether consumers are willing to trade off the loss of social contact for the benefits of automation.

Preferential treatment revealed a nonsignificant relationship with perceived relationship investment in all samples except one, and this contradicts the common opinion that regular buyers should be treated and served differently than nonregular buyers should. A potential explanation for this finding might be that customers do not appreciate being openly favored above other customers. If this is true, it would hold important implications for retailers, because it emphasizes that efforts directed at customers should be made delicately to avoid putting customers in an uncomfortable position. Alternatively, perhaps preferential treatment is simply not as powerful as the other antecedents of perceived relationship investment, and in the presence of the other tactics, preferential treatment is less valued by the consumer.

Finally, mixed evidence was detected for the positive effects of tangible rewards on perceived relationship investment. Again, this was true in the U.S. samples in which no significant paths were found. In U.S. markets, the longer tradition of providing customers with tangible rewards for their loyalty might decrease the impact of such offers. The natural appeal of tangible rewards can be assumed to decrease if more sellers start offering them. As tangible rewards become widespread, their absence may disappoint consumers, whereas their presence would not necessarily boost customer retention. Competitors can easily imitate tangible rewards such as frequent flyer programs, customer loyalty bonuses, and free gifts. Perhaps such "wear-out" effects have simply occurred less in the European markets.

A second key research objective of this study was to assess the effect of perceived relationship investment on relationship quality and ultimately behavioral loyalty. We expected perceived relationship investment to play an important role in determining relationship quality, which was confirmed in all six samples. The path from relationship quality to behavioral loyalty was also demonstrated across samples. These results support the findings of Bagozzi (1995) and Kang and Ridgway (1996), who argue that consumers feel obligated to reciprocate a retailer's investments in the retailer–consumer relationship by increasing their loyalty to this retailer. This finding implies that it pays off for retailers to invest in consumer relationships, because it results in increased loyalty.

Finally, we found initial support for our third research question. We collected empirical evidence for what previously have been only assumptions suggesting that customer characteristics can influence the effectiveness of relationship marketing investments (e.g., Ganesan 1994). The results show that consumer relationship proneness repeatedly acts as a moderator of the effectiveness of perceived relationship investment, perhaps operating as a heightened sensitivity to a seller's efforts directed at buyers (see Dwyer, Schurr, and Oh 1987). In addition, product category involvement moderated the effect of perceived relationship investment in some cases. Paths that are significantly moderated suggest that consumers with a lower degree of product category involvement are less influenced by a retailer's investment in the relationship (e.g., consistent with Solomon et al. 1985). Leuthesser (1997) points out that a buyer's stake in a relationship with a seller tends to be higher with greater involvement in the product category. Our data then might be reasonably interpreted as higher stakes in a relationship, which cause consumers to appreciate a retailer's investments more strongly.

These observations emphasize that retailers should not lose sight of the importance of consumer-related factors in shaping relationship quality No matter how much trouble the retailer goes to in order to increase relationship quality, the effects of those efforts and resources can be tempered or strengthened by the consumer's level of relationship proneness and product category involvement. Consequently, retailers should not only invest more in consumer relationships but also pay equal attention to finding consumers who are most receptive to such investments. In addition to the more traditional criteria of product-market segmentation such as market size, market growth, and expected market share, segmenting consumers according to levels of consumer relationship proneness or product category involvement could affect expected share of market and share of customer. For example, a practical approach toward accomplishing this objective might be to add a few questions to the registration form of a store's customer loyalty card that measure consumer relationship proneness and product category involvement.

Limitations and Directions for Further Research

Some limitations might be related to collecting our data and interpreting our results. A first limitation might be the omission of important variables. For example, additional tangible elements in the retail mix, such as pricing and promotion, product quality and assortment, and service quality, could be added as antecedents of relationship investment. This is evidenced by the fact that the percentage of explained variance of perceived relationship investment could still be improved. Relationship marketing theory not only should have eyes for typical relationship marketing constructs but also could examine the value of existing instruments such as SERVQUAL in affecting relationships. Although the SERVQUAL measures (Parasuraman, Zeithaml, and Berry 1988) can be applied to a broad spectrum of contexts, no previous research of which we are aware has examined their effects on the relationship outcomes examined in this study. Moreover, it is likely that the relative importance of product, service, and relationship marketing tactics in determining relationship investment varies according to the length of a relationship. We could assume that the longer a relationship exists, the stronger is the relative impact of relationship marketing tactics on perceived relationship investment compared with product and service tactics. Consequently, it could be fruitful to compare research models incorporating all these components across buyer segments that exhibit different levels of relationship length.

Second, this study focused on consumer-specific moderators of perceived relationship investment, but a challenging research avenue would be to assess the role of other contingency factors. For example, it might be interesting to study the differences between large store chains and small, independent neighborhood stores. It could be argued that small stores would demonstrate more relationship-friendly characteristics than large store chains, given that the degree of social exchange and the possibilities for interpersonal communication are generally greater in smaller stores. Whereas larger store chains generally operate on the basis of anonymous self-service, the survival of small, independent stores is often dependent on personal service and knowledge of consumer preferences. A third potential shortcoming in the study is common method bias. We used one questionnaire to measure all constructs included, so perhaps the strength of the relationships among these constructs may be somewhat inflated. A fourth potential limitation is related to the measurement of behavioral loyalty. The true meaning of behavioral loyalty may be only partially captured given that its measure was based on self-reports. Database information could be used as input for measuring actual purchasing behavior. The confidence in our results could be strengthened with access to behavioral data on customer purchase histories that are not subject to potential recall loss. It would then be possible to examine longer strings of purchases and perhaps to incorporate contextual information. These recognized shortcomings could inspire researchers to define their future research agendas.

APPENDIX
Summary of Measures

Construct	Measures
Direct mail	This store often sends mailings to regular customers. This store keeps regular customers informed through mailings. This store often informs regular customers through brochures.
Preferential treatment	This store makes greater efforts for regular customers than for nonregular customers. This store offers better service to regular customers than to nonregular customers. This store does more for regular customers than for nonregular customers.
Interpersonal communication	This store takes the time to personally get to know regular customers. This store often holds personal conversations with regular customers. This store often inquires about the personal welfare of regular customers.
Tangible rewards	This store rewards regular customers for their patronage. This store offers regular customers something extra because they keep buying there. This store offers discounts to regular customers for their patronage.
Perceived relationship investment	This store makes efforts to increase regular customers' loyalty. This store makes various efforts to improve its tie with regular customers. This store really cares about keeping regular customers.
Relationship quality	
Relationship satisfaction	As a regular customer, I have a high-quality relationship with this store. I am happy with the efforts this store is making towards regular customers like me. I am satisfied with the relationship I have with this store.
Trust	This store gives me a feeling of trust. I have trust in this store. This store gives me a trustworthy impression.

APPENDIX
Continued

Construct	Measures
Relationship commitment	I am willing "to go the extra mile" to remain a customer of this store. I feel loyal towards this store. Even if this store would be more difficult to reach, I would still keep buying there.
Behavioral loyalty	What percentage of your total expenditures for clothing do you spend in this store? Of the 10 times you select a store to buy clothes at, how many times do you select this store? How often do you buy clothes in this store compared to other stores where you buy clothes?
Product category involvement	Generally, I am someone who finds it important what clothes he or she buys. Generally, I am someone who is interested in the kind of clothing he or she buys. Generally, I am someone for whom it means a lot what clothes he or she buys.
Consumer relationship proneness	Generally, I am someone who likes to be a regular customer of an apparel store. Generally, I am someone who wants to be a steady customer of the same apparel store. Generally, I am someone who is willing to "to go the extra mile" to buy at the same apparel store.

Notes The items formulated in the Appendix were based on the apparel samples. In the food samples, the term "apparel store" was replaced by "supermarket." All are seven-point scales with "strongly disagree" and "strongly agree" as the anchors.

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Kelly Hewett & William O. Bearden

Dependence, Trust, and Relational Behavior on the Part of Foreign Subsidiary Marketing Operations: Implications for Managing Global Marketing Operations

The authors explore how a global firm's ability to foster successful relationships between its foreign subsidiaries' and headquarters' marketing operations can enhance the performance of products across markets. The results show that cooperative behaviors are positively associated with product performance in the subsidiaries' markets. National culture in the foreign markets is also found to moderate the effect of trust on relational behaviors. In addition, the subsidiaries' acquiescence becomes increasingly important as the firm attempts to standardize marketing programs.

In today's global marketplace, it is increasingly likely that firms have a presence in more than one national market. Achieving success in the different markets in which the firm operates is largely dependent on the firm's ability to manage its marketing activities on a global basis. In particular, the abilities of the managers at the marketing operations in the individual foreign markets, as well as their willingness to work in conjunction with managers at the headquarters' marketing operation to achieve established objectives, may determine whether the firm can achieve marketing success.

Whether or not multinational corporations (MNCs) have a tendency toward standardizing or adapting global marketing strategies across foreign markets, cultivating effective relationships with the managers in the marketing operations at those locations is critical (Jain 1989; Quelch and Hoff 1986). According to Bartlett and Ghoshal (1991), a key change in strategy in MNCs is the building of multinational flexibility by relinquishing strategic roles to individual subsidiaries. As subsidiaries take on different strategic marketing roles, there is a greater need for effective management of the relationships between the headquarters' and subsidiary's marketing operations. From a relationship perspective, key success factors in cultivating successful relationships include the subsidiary's trust in and dependence on the headquarters (Blau 1964; La Valle 1994; Makoba 1993; Morgan and Hunt 1994).

Research examining the interface between the headquarters' and foreign subsidiary's marketing operations continues to suggest the importance of these relationships. Recent studies have focused more generally on the issues of power and control over foreign subsidiaries (see Nobel and Birkinshaw 1998; Nohria and Ghoshal 1994; O'Donnell 2000; Roth and Nigh 1992) and the management of knowledge flows across markets (Gupta and Govindarajan 2000). In addition, research focusing on other intrafirm relationships, such as those between functional units (see Ruekert and Walker 1987; Song, Montoya-Weiss, and Schmidt 1997; Song and Parry 1997) has tended to focus more directly on how the units differ in their perceptions of their roles and/or positions within the firm. Last, the literature on marketing relationships has largely addressed relationships in one national setting and has not considered the influence of national culture or the multinational firm context. We extend the findings from these different branches of literature by focusing more directly on the global marketing operation and by employing a relationship marketing framework to understand the factors driving successful relationships between the headquarters' and subsidiary's marketing operations. Finally, by examining the influence of national culture on these relationships, we provide additional insights into managing relationships in an international context.

In this article, we explore the factors that contribute to firms' abilities to successfully manage the marketing function globally, focusing on the perceptions of the headquarters–subsidiary relationships by the subsidiaries' marketing managers. We argue that cooperative and acquiescent behaviors on the part of the marketing operations at the foreign subsidiaries should enhance the likelihood that performance objectives for individual products are achieved in the subsidiaries' individual markets. As such, we approach the pre-

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sent research from a relationship marketing perspective (see Anderson and Narus 1990; Ganesan 1994; Morgan and Hunt 1994). Specifically, we link predictions based on the relationship marketing literature with findings regarding standardization/adaptation of marketing strategy and the influence of national culture on managerial behavior. Subsequently, we develop a framework that provides a lens through which to examine headquarters–subsidiary marketing function relationships and to investigate their importance in managing global marketing programs.

Management of Global Products and the Headquarters–Subsidiary Relationship

The importance of cultivating brands on a global basis is well recognized. When properly managed, a brand can contribute to the MNC's reputation and performance worldwide, acting as a symbol of the company's global image (Morris 1996). Also, global cultivation of a brand can yield economies of scale in the marketing and management of those brands (Aaker and Joachimsthaler 1999; Buzzell 1968; Levitt 1983; Quelch and Hoff 1986). Recent research in global marketing has focused largely on standardization/adaptation (see Jain 1989; Picard, Boddewyn, and Grosse 1998, Roth 1995a, b; Samiee and Roth 1992; Szymanski, Bharadwaj, and Varadarajan 1993; Walters and Toyne 1989), issues related to culture (see Money, Gilly, and Graham 1998), cross-national comparisons (see Samiee and Ancker 1998; Song and Parry 1997), and country-of-origin effects (see Hong and Wyer 1989; Maheswaran 1994). To date, limited empirical work has been done to explore the global management of the marketing function.

An example of the importance of headquarters–subsidiary communication in an MNC dedicated to global marketing is Colgate-Palmolive. In a recent study of consumer branding by global firms, Boze and Patton (1995) found that more than one-third (37%) of the Colgate brands included in their study were marketed in multiple countries and six of the brands are marketed in more than 33 countries. Cooperation from managers in those foreign markets with Colgate's headquarters is key to success in implementing global marketing programs for brands and achieving the firm's goal of superior performance in those markets (Kindel 1994).

The headquarters–subsidiary relationship has been suggested to be one of increasing importance for the MNC (Roth and Nigh 1992). Moreover, there is at least some evidence that headquarters–subsidiary marketing operation relationships may vary significantly in effectiveness. Managers, for example, may be reluctant to accept ideas communicated to them because they may not want to acknowledge the value of others' ideas in a competitive corporate environment (Goodman and Darr 1996). Similarly, Picard, Boddewyn, and Grosse (1998) have discovered that the subsidiary's autonomy is an important factor influencing an MNC's international marketing decisions.

The present research draws on the relationship marketing literature to conceptualize the interface between the headquarters' and subsidiary's marketing operations Social exchange theory, which we use in developing our conceptual framework, is often used as a foundation for understanding factors that influence relationship quality. One central idea underlying relationship marketing is that the goal of marketers is to nurture lasting relationships by means of a structure of mutual benefits for the parties involved (Achrol 1997). The importance of fostering successful relationships, such that both parties achieve long-term benefits, is highlighted in relationship marketing studies (see Morgan and Hunt 1994). An important question for the MNC is the extent to which enhancing the relationship between the headquarters' and subsidiary's marketing operations is associated with successful implementation of marketing programs in the subsidiaries' markets.

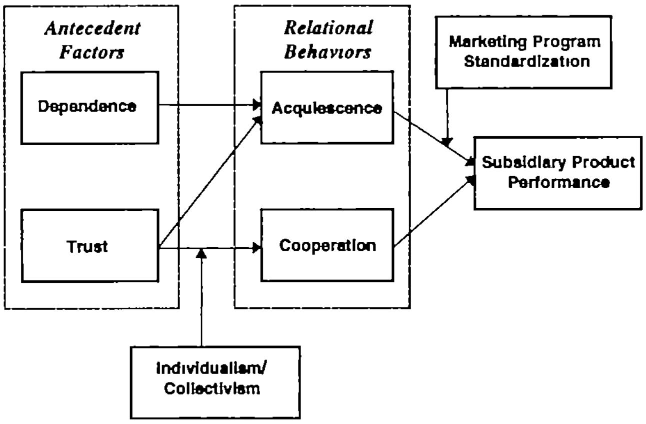
A Model of Headquarters–Subsidiary Relationships

Largely on the basis of the predictions of social exchange theory, certain features have repeatedly been found to be important to building quality relationships. Specifically, trust and dependence between parties have been suggested to be central factors in motivating each party to participate or engage in successful and mutually beneficial exchange relationships (see Blau 1964; La Valle 1994; Makoba 1993; Morgan and Hunt 1994). Based largely on social exchange theory, the conceptual framework depicted in Figure 1 suggests the importance of both trust and dependence for forming successful relationships. These antecedent factors not only have consistently been found to be important factors in studies across a variety of relationship contexts (see Anderson and Narus 1990; Ganesan 1994; Garbarino and Johnson 1999; Joshi and Arnold 1998; Morgan and Hunt 1994) but also are particularly relevant to the context of this study.

Relational Behaviors in the Context of the MNC

Studies of relationship marketing typically examine different characteristics of exchange relationships (e.g., trust, dependence) in terms of their influence on some desired outcome. More specifically, these outcomes generally repre-

FIGURE 1
A Model of Headquarters–Subsidiary Relationships


Antecedent Factors
Dependence
Trust
Relational Behaviors
Acquiescence
Cooperation
Marketing Program Standardization
Subsidiary Product Performance
Individualism/ Collectivism

sent desired behaviors on the part of one or more of the partners in the exchange. The specific outcomes that are examined tend to differ on the basis of the context of the study. For example, studies of buyer–supplier relationships focus on behaviors such as acquiescence, a decreased propensity to leave a relationship (Morgan and Hunt 1994), or a long-term orientation in the relationship (Ganesan 1994), whereas studies in the marketing channels context focus on behaviors such as cooperation (Anderson and Narus 1990) or flexibility (Lusch and Brown 1996). Across these different contexts, acquiescence and cooperation are consistently highlighted as representing desirable behavioral outcomes from successful relationships (Anderson and Narus 1990; Bendapudi and Berry 1997; Ganesan 1994; Kumar, Stern, and Achrol 1992; Morgan and Hunt 1994). These two behaviors not only are consistent across the relationship marketing literature but also are particularly appropriate in the context of headquarters–subsidiary marketing function relationships in terms of the implementation of marketing program elements in individual foreign markets.

On the basis of findings from previous studies of marketing relationships, these two behaviors are suggested in our conceptual framework to result from perceptions of dependence and trust on the part of managers at the subsidiary's marketing operations. Specifically, successful relationships between the headquarters' and subsidiary's marketing operations should result in the subsidiary's (1) acquiescence to the headquarters in terms of marketing procedures, directives, and programs implemented in the local market and (2) cooperation with the headquarters' marketing operation to achieve mutual goals with respect to the marketing procedures, directives, and programs for a particular product. An important distinction between these two constructs, highlighted by Morgan and Hunt (1994), is that cooperation is proactive whereas acquiescence is reactive.

Acquiescence. Acquiescence is defined as the extent to which one party in an exchange situation accepts or adheres to another's specific requests (Bendapudi and Berry 1997; Kumar, Stern, and Achrol 1992; Morgan and Hunt 1994; Steers 1977). Because different subsidiaries in dispersed geographic locations will have different responsibilities and will operate in various market conditions, each subsidiary will possess unique knowledge and experience and may have interests that diverge from those of the headquarters (Nohria and Ghoshal 1994). Therefore, the headquarters faces a need to utilize its unique knowledge in decision making, while somehow influencing the subsidiaries to act in line with its interests.[1] Kumar, Stern, and Achrol (1992), in their assessment of reseller performance in supplier–reseller relationships, suggest that reseller compliance, or the reseller's reception of the supplier's channel policies and programs, is important for the supplier's ability to present its products to end users in the manner it wishes. We similarly view subsidiary acquiescence as important for the headquarters' ability to present its products to end users in accordance with its proposed marketing plans. In the present study, we perceive the extent to which the foreign subsidiaries act in line with the headquarters' interests as reflecting the quality of the relationship. Acquiescence then reflects the subsidiary marketing managers' participation in marketing procedures, directives, and programs that the marketing function at the headquarters attempts to implement, as well as their performance of headquarters' marketing operation requests.

Cooperation Cooperation is defined as complementary coordinated actions taken by the headquarters' and subsidiary's marketing functions to achieve mutual outcomes (see Anderson and Narus 1990, p. 45). Morgan and Hunt (1994) suggest that cooperation requires the two parties in a relationship to participate actively to achieve mutual benefits and that cooperation promotes success in relationships. Similarly, Roth and Nigh (1992) define coordination by foreign subsidiaries as collaborative actions to achieve unity of effort with the MNC and suggest that collaboration is characteristic of effective headquarters–subsidiary relationships. We view cooperation from the perspective of the subsidiary's managers, in terms of their interactions, communications, and goals with respect to marketing procedures and programs for a product.

Dependence-Based Path to Relational Behavior

The dependence of one party on another can be defined as the extent to which the first party relies on the relationship for the fulfillment of important needs (Rusbult and Van Lange 1996). In the present study, dependence reflects the extent to which the subsidiary depends in general on the effective functioning of the headquarters in order to perform its own tasks related to the implementation of a marketing program for a product. In the context of marketing operations at MNC headquarters and subsidiaries, some form of a dependence relationship is likely.

According to social exchange theory, the existence of an imbalance of power due to one party's dependence on the other makes it possible for one party to direct the activities of another (Blau 1964; Molm 1994). The level of perceived dependence of one partner on another is thought to be an important feature of the relationship (Anderson and Narus 1990; Berry and Parasuraman 1991; Blau 1964; Gundlach and Cadotte 1994; Parsons 1964; Smith, Ross, and Smith 1997). The dependence of one party on another is also suggested to be positively associated with acquiescence to that party (Bendapudi and Berry 1997; Blau 1964; Morgan and Hunt 1994). The greater the perceived dependence of the subsidiary's marketing operation on the headquarters, the less powerful the subsidiary's marketing managers will feel, and the more likely the subsidiary will be to acquiesce to the marketing function at headquarters. Although some research in the channels literature has concluded that dependence is not related to control (see Gaski 1984), our view is that a subsidiary's managers should feel compelled to follow directives on the basis of its reliance on headquarters for important resources.

Support for these notions can be found in several related studies. For example, Prahalad and Doz (1981) study the influence of dependence on the strategic control a headquarters has over its subsidiaries. Similar to the view of dependence and acquiescence taken here, Prahalad and Doz's definition of strategic control is the "extent of influence that a head office has over a subsidiary concerning decisions that affect subsidiary strategy" (Prahalad and Doz 1981, p. 5). Anderson and Narus (1990) also examine unilateral dependence as a determinant of the extent to which one firm has influence over its partner, and these authors find a link between unilateral dependence and the use of influence by a supplier over its distributors. In addition, Joshi and Arnold (1998) find that the dependence of a buyer on a supplier in an industrial setting leads to buyer compliance. Thus, the perceived dependence of the subsidiary's marketing function on that at headquarters should result in higher levels of acquiescence. In summary,

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[1] In addition to the research reported in this article, we conducted depth interviews with global marketing managers at MNC headquarters (n = 5). These interview responses revealed that global managers considered poor relationships to be detrimental to the success of marketing programs to the extent that the poor relationships influenced the subsidiary's marketing operations not to adhere to or accept policies or procedures handed down by the headquarters (i.e., acquiescence).

> H_1: The subsidiary's perceived dependence on the MNC headquarters' marketing function is positively related to the subsidiary's acquiescence to the headquarters.

Trust-Based Paths to Relational Behavior

The trust-based paths reflect the importance of trust in relationships (Bendapudi and Berry 1997; Blau 1964; Ganesan 1994; Garbarino and Johnson 1999; Kozak and Cohen 1997). The literature dealing with trust is vast, and definitions range from those viewing trust as a personality trait (Dwyer and LaGace 1986) to those encompassing beliefs about another's behavior or behavior that reflects the truster's vulnerability to the other (Moorman, Zaltman, and Deshpandé 1992). In Doney and Cannon's (1997, p. 36) study of trust in buyer–seller relations, the authors define trust as "the perceived credibility and benevolence of a target of trust." Doney and Cannon's definition captures the motives and/or intentions of the other party and is adopted here. Although many studies in an organizational context focus solely on the credibility aspect (see Moorman, Zaltman, and Deshpandé 1992; Morgan and Hunt 1994), without specific regard for the notion of benevolence, the emphasis on benevolence may be particularly important in this context, because the subsidiaries in our sample were all wholly owned subunits of the parent corporations. From the subsidiary's perspective, a concern for its welfare may be particularly important in motivating relational behavior, because the headquarters may be seen as "going beyond the call of duty."

Trust is positioned here as having a direct influence on acquiescence and cooperation (Bendapudi and Berry 1997; Morgan and Hunt 1994). From a relational perspective, trust is important as a mechanism both for persuasion and for encouraging future exchanges. Exchange partners often heed each other's suggestions by virtue of the trust placed in the partner (La Valle 1994, p. 596). Morgan and Hunt's (1994) findings regarding the influence of trust on acquiescence support this expectation. Doney and Cannon (1997) likewise find that trust enhances the likelihood of future interactions among parties. Relatedly, Moorman, Zaltman, and Deshpandé (1992) find that trust enhances the quality of user–researcher interactions and commitment to those relationships. Similarly, the trust the subsidiary's marketing function has in the headquarters should enhance acquiescence. Multiple aspects of trust embodied in our definition can also be seen as leading to a willingness to follow directives. First, a subsidiary may be more willing to acquiesce to the extent that it perceives the headquarters as likely to keep promises and provide reliable information (i.e., credibility). Likewise, if the subsidiary perceives the headquarters as concerned about its welfare (i.e., benevolence), it may be more likely to perceive directives to be in its best interest and more likely to follow them. More formally,

> H_2: The subsidiary's trust in the headquarters' marketing function is positively related to its acquiescence to the MNC's headquarters

Morgan and Hunt (1994) also find that trust leads to cooperative behaviors and to a decrease in uncertainty. Arguments similar to those provided for the effects of trust on acquiescence can be made for the influence of trust on cooperation. If the headquarters is perceived as credible and as concerned with the subsidiary's welfare (benevolence), the subsidiary may be more likely to perceive objectives as mutually beneficial and may be more likely to cooperate. Relatedly, Ganesan (1994) finds that trust positively influences a retailer's long-term orientation toward a relationship, reflecting a perception that joint outcomes will benefit both organizations in the long run. Thus, trust enhances perceptions that outcomes will be mutually beneficial for both partners. Likewise, Anderson and Narus (1990) argue that cooperative behaviors lead to outcomes that exceed what one partner could achieve if it acted alone and focused only on its interests. Trust, then, is expected to lead to cooperation. Therefore,

> H_3: The subsidiary's trust in the headquarters' marketing function is positively related to the subsidiary's cooperation with the MNC's headquarters

Cultural Influences on Relational Behavior

The behavior and attitudes of managers at foreign subsidiaries are likely to differ from those of managers at the MNC's headquarters if the cultures in those markets differ significantly. Hofstede (1980) found that cultural differences vary along four dimensions: uncertainty avoidance, individualism/collectivism, tolerance of power distance, and masculinity/femininity.[2] On the basis of a study of more than 88,000 employees at subsidiaries of a U.S.-based MNC, Hofstede (1980) created indices for more than 40 countries for each dimension. These indices have been used in more than 60 applications (Sondergaard 1994). The underlying values and attitudes of different cultural groups can influence the behavior of those groups, as well as the nature of decisions they make (Hofstede 1980; Schneider and DeMeyer 1991; Shane 1994; Tayeb 1994). As examples, cultural values can affect organizational processes (Hofstede 1983; Stephens and Greer 1996) and leadership styles of managers (Tayeb 1994). In addition, Tse and colleagues (1988) find that culture influences decisiveness and choice of decision strategies used in marketing situations.

In terms of cultural influences on relational behavior, the present study focuses on the influence of the individualism/collectivism dimension. Individualism/collectivism reflects the way people in a society interact and has been suggested to be the most pervasive difference associated with national culture (Williams, Han, and Qualls 1998). This dimension of culture also appears most relevant to the study of relationships, given its focus on interactions among people. In more individualistic cultures, unilateral or individual goals take on greater importance than group goals, whereas in collectivistic societies, interpersonal ties take on greater importance, and people are expected to focus more on the needs of the collective group than on their own needs (Doney, Cannon, and Mullen 1998; Hofstede 1984). Our interest in examining the effect of culture, and individualism/collectivism specifically, is to understand conditions under which a relationship based on trust might be more effective in leading to cooperative behaviors.

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[2] In subsequent studies, a fifth dimension, Confucian dynamism, or long-term orientation, was found (Hofstede 1984).

Recently, the level of individualism/collectivism has been suggested to influence the likelihood of cooperative behaviors in multinational organizations directly (Chen, Chen, and Meindl 1998). Empirical evidence also points to a link between this dimension and relational behaviors. Chatman and Barsade (1995), for example, find that members of collectivistic cultures are more likely to reciprocate in cooperative behaviors. In addition, Williams, Han, and Qualls (1998), in their study of cross-cultural business relationships, find that managers in highly collectivistic countries are more receptive to social bonding, which focuses on personal factors such as trust, than structural bonding, which focuses on strategic objectives. More specifically, managers in collectivistic cultures reacted more strongly to interpersonal factors such as trust than monetary incentives for motivating relational behaviors. Therefore, trust should be more effective in motivating relational behavior among managers in collectivistic cultures than in individualistic cultures. Because cooperation generally reflects proactive behaviors on the part of managers at the subsidiary to achieve mutual outcomes with the headquarters (see Anderson and Narus 1990), the level of individualism/collectivism should influence the extent of cooperative behaviors. Specifically, we expect individualism/collectivism to moderate the relationship between trust and cooperation such that trust will take on greater importance in motivating cooperative behaviors in more collectivistic cultures. The following hypothesis summarizes this expectation:

> H_4: Trust will have more of an effect on cooperation in highly collectivistic cultures than in highly individualistic cultures

Performance as an Outcome of Relational Behaviors

In an effective relationship, both partners are expected to receive long-term benefits from the relationship so that both parties can achieve their respective goals (see Morgan and Hunt 1994). Although many factors can be linked to performance, we view the possible performance implications of strong relationships as an important question that is worthy of study. To the extent that the subsidiary's marketing function displays cooperation and acquiescence, we expect the ability of a product to meet the objectives established for the individual subsidiary's market to be enhanced. Similar to Moorman and Miner (1997), we are concerned here with how well the product achieves profitability, sales, and share goals.

The ability of an MNC's headquarters to motivate and control the subsidiary's actions in executing its global strategies is described as a critical aspect of the firm's ability to compete successfully (Doz, Prahalad, and Hamel 1990). Intuitively, the willingness of subsidiaries to follow directives in implementing marketing programs for a particular product should be positively associated with the ability of that product to achieve its established performance objectives. In addition, international cooperative behaviors have been suggested to be key to the success of global companies (Adler 1991). Relatedly, Jap (1999) finds support for the notion that coordination efforts on the part of partners in a dyadic relationship, defined as their pattern of complementary actions and activities, can lead to enhanced performance in terms of profits resulting from dyadic collaboration efforts. From a relationship marketing perspective, relational behaviors should result in both parties in an exchange relationship achieving their respective goals. In our context, achieving the product's goals, as established in the global marketing program, can be seen as a mutual objective. Consistent with these arguments, we propose the following:

> H_5 The subsidiary's marketing function cooperation is positively related to brand performance in the market in which that subsidiary operates

Moderating Effect of Global Marketing Program Orientation

Last, as Simpson and Wren (1997) suggest, several nonrelational factors may influence the effect of the nature of an exchange on the outcome of that exchange. Notably, the influence of such nonrelational factors has not been studied extensively. An important aspect of the MNC's marketing strategy is the extent to which the marketing program for the product is standardized across markets or adapted to each market (Douglas and Wind 1987; Jain 1989; Picard, Boddewyn, and Grosse 1998; Quelch and Hoff 1986). This choice of marketing program orientation has implications for both relationship quality and product performance. For example, Jain (1989) hypothesizes that conflict and poor relationships between the marketing functions at an MNC's headquarters and its foreign subsidiaries discourage the transfer of global marketing program elements to individual markets. We focus on standardization versus adaptation in terms of the content of the marketing program, in accordance with Jain's (1989) description of this variable.

The greater the extent to which the headquarters' marketing function has an orientation toward standardizing the marketing program for a product, the more important the relationship with the marketing function at headquarters would be to an individual subsidiary's ability to implement that program successfully in its market. In situations in which the marketing program for a particular product is customized, such that the subsidiary's marketing function is more autonomous in its developmental efforts or strategy implementation, acquiescence to the headquarters may be less important for the product's ability to meet its objectives. In addition, when the headquarters is attempting to standardize the marketing program, the likelihood of goal congruity between the headquarters and subsidiaries will be greater than when the subsidiaries are more autonomous. Thus, the importance of relational behaviors on the part of the subsidiary for achieving those goals should be less. On the basis of these arguments, we offer the following:

> H_6: When global marketing program standardization is high, acquiescence will have a greater effect on market brand performance than when standardization is low

Research Methods

In this section, we describe the procedures used to gather the data in detail. First, we discuss the survey instrument and selection of key informants. Next, we describe the procedures used to assess nonresponse bias. Finally, we present the measures and steps followed in validating the multiple-item scales included in our questionnaire.

Survey Procedures and Sample

We conducted the present study using a mail survey. Where possible, we used existing measures for operationalizing constructs. We administered the questionnaire in English, because target respondents were senior managers at U.S.-based firms. We pretested the questionnaire among 16 academic experts and marketing managers to assess clarity of instructions and scale items. We sent draft questionnaires to participants and made telephone appointments for debriefing after comments were received. Participant comments focused primarily on response format instructions; we made modifications on the basis of their feedback.

Key informants were subsidiary-based marketing managers who were responsible for the marketing activities for one or more products/brands sold in their respective markets. Selecting key informants on the basis of their formal roles in the subsidiary, such that they are knowledgeable regarding the phenomenon under study, is critical in organizational research (Kumar, Stern, and Anderson 1993). Therefore, the sampling procedure required the identification of foreign subsidiaries of U.S.-based global firms and people with the appropriate responsibilities at those subsidiaries.

We developed the sample using the following steps: First, using the *International Directory of Corporate Affiliations: Corporate Affiliations Plus* (1997), we accessed hierarchies of U.S.-based firms and identified firms with foreign subsidiaries. Using this list of firms and subsidiaries, we attempted to identify target respondents and gain cooperation of the key informant in the survey (see Hartline and Ferrell 1996). It was necessary that there be a company-owned marketing presence in each foreign market. Second, we placed telephone calls to corporate headquarters in an effort to identify marketing managers with the appropriate responsibilities in foreign subsidiaries. When the appropriate contact at headquarters was not available, we called the subsidiaries. This procedure resulted in the identification of 435 subsidiaries from 135 U.S.-based corporations. Third, subsequent correspondence and telephone calls indicated that in a few cases, the foreign office was not appropriate Elimination of such locations resulted in a final sample of 406 foreign subsidiaries, which represented 133 U.S.-based firms.

A mail questionnaire was sent to each of the identified respondents. As in Dillman's (1978) work, follow-up reminder postcards were sent to nonrespondents after three weeks, and follow-up questionnaires were sent after six and ten weeks.[3] Cover letters outlined the nature of the study and emphasized the confidentiality of the respondents. Respondents indicated on the questionnaires the name of the product or brand, its product category, and the geographic region for which they responded. As an incentive for participation, respondents were also given the opportunity to request a summary report of findings from the completed study (see Robertson, Eliashberg, and Rymon 1995). Initial and follow-up mailings resulted in responses from 143 subsidiaries of 66 different MNCs, for a 35% response rate. These 143 responses represent 36 different country markets of the 49 included in the original mailing. The respondents represented more than 30 industries. The median number of employees at the subsidiaries was 150; the average sales for the subsidiaries in U.S. dollars was 533 million. The respondents averaged 3.33 years of experience in their particular positions and 7.90 years of experience with the subsidiary.

As an additional measure to increase the speed of response and the overall response rate, participants were offered the options of either faxing their responses (Vazzana and Bachman 1994) or using a return envelope. Of the respondents, 17% faxed their returns, and the remaining 83% mailed them or used a courier service such as DHL.

Estimating Nonresponse Bias

We first examined nonresponse bias using the procedures recommended by Armstrong and Overton (1977). As such, we compared the responses from the first mailing with the responses from the third mailing by testing for mean differences on all the variables in the study, including subsidiaries' characteristics. The results of this comparison showed no significant differences across the waves of mailings on responses to any multiple-item scales or indices or to any questions regarding subsidiaries' characteristics. (The p-values for these comparisons ranged from .20 to .87.) The same analyses using the first versus the second and third waves combined also yielded no significant differences. In addition, we gathered secondary data on subsidiaries' characteristics for both responding and nonresponding firms (*America's Corporate Families and International Affiliates: Corporate Affiliations Plus* 1998). Comparisons across the numbers of employees and total sales of subsidiaries also yielded no significant differences ($p \leq .77$ for employees, and $p \leq .43$ for sales). Finally, we compared response rates across industry groups (nondurables, durables, and services) and found that they did not differ significantly ($p \leq .40$).

Measurement

Preexisting measures were identified where possible and adapted on the basis of the nature of the phenomena under study. Dependence was assessed on a scale adapted from a measure used by Astley and Zajac (1990) in their study applying exchange theory to study subunit power within MNCs. This measure included items intended to assess the extent to which the managers perceive that their subsidiary depends in general on the effective functioning of the headquarters in order to perform its own tasks, and the scale was originally developed with the objective of applying social exchange theory to relationships between subunits of MNCs. Doney and Cannon's (1997) measure of trust was adapted for the study to assess subsidiaries' marketing managers' trust in the headquarters. Kumar, Stern, and Achrol (1992, p. 240) develop a measure of reseller compliance with suppliers, which they define as the extent to which a reseller complies with the supplier's channel policies and programs. This conceptualization parallels the concept of acquiescence proposed previously and therefore was adapted for this study. Cooperation was measured on a scale adapted from Song, Montoya-Weiss, and Schmidt's (1997) study of cross-functional cooperation.

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[3] Dillman (1978) recommends reminders after one week and replacement questionnaires after three weeks and seven weeks for domestic surveys. Because international mailings are hampered by the lengthy delivery process, two weeks were added for the reminder postcard, and three weeks were added for the follow-up mailings with replacement questionnaires

In measuring performance, we employed procedures similar to those used by Moorman and Miner (1997), in that respondents were asked to rate the extent to which a particular product achieved various outcomes related to profitability, sales, and market share. We conducted several additional analyses to assess the validity of the performance index. First, an examination of the corrected item-to-total correlations revealed that the estimates for the five indicators ranged from .66 to .86. As such, each of these values exceeds the recommended cutoff value of .50 for item retention (Zaichkowsky 1985). Second, we correlated the averaged index of relative performance (i.e., we operationalized each indicator using subjective measures that reflected performance relative to objectives) (see Moorman and Miner 1997, p. 102) with an absolute measure of market share for the product and market being investigated, controlling for the brand's length of time in the market. This correlation was .38 ($p \leq .01$). More important, though modest in strength, this estimate was significant and positive. The absence of a stronger relationship is due, on the one hand, to differences between the relative measure used in testing our hypotheses and the absolute measure of performance and, on the other hand, to the inherent fallibility of self-reported data (see Shimp and Kavas 1984, p. 800).

The culture index values developed by Hofstede (1980) were used to reflect individualism/collectivism, and an index of marketing program elements based on the work of Jain (1989) was used for the marketing program orientation construct. The standardization/customization index included items reflecting various elements of the marketing program for a product, each of which can have varying degrees of standardization or customization. For these latter two measures, positive responses indicate higher levels of individualism and customization, respectively.

We subjected all scaled multiple-item measures that were assessed with reflective indicators (i.e., all measures except the individualism/collectivism and marketing program orientation indices) to purification procedures designed to evaluate dimensionality, reliability, and discriminant validity (see Anderson 1987; Gerbing and Anderson 1988). Across all the scales, we identified five items with low factor loadings ($\lambda < .50$) and subsequently dropped them from further analyses. The final measurement scales, as well as Cronbach's α values, are presented in Appendix A. Using the PROC CALIS procedure in SAS, we first assessed the psychometric properties of our final measures using confirmatory factor analysis. Given the limitations of our sample size, we divided the constructs into two subsets: exogenous (e.g., trust and dependence) and endogenous (e.g., acquiescence, cooperation, and performance) variables to form measurement models (see Doney and Cannon 1997). For the second model, the performance construct was estimated as a higher-order factor with two sets of indicators representing sales volume (sales and market share) and profitability (return on investment, return on assets, and profit margin). Although the chi-square statistics for both models were statistically significant ($\chi^2 = 88.88$, degrees of freedom [d.f.] = 26 for Model 1 and $\chi^2 = 144.99$, d.f. = 72 for Model 2), these estimates are sensitive to sample size and should not be considered without examinations of other fit indices (Sharma 1996). Other fit indices (goodness-of-fit index = .88 for Model 1 and .86 for Model 2, Tucker–Lewis index = .82 for Model 1 and .92 for Model 2, relative noncentrality index = .87 for Model 1 and .94 for Model 2) suggest that the measures provide a reasonable fit to the data. In addition, loadings for all indicators were significant (t-values all ≥ 4.60).

With one exception (acquiescence), Cronbach's α for the final scales exceeded .70, providing evidence of generally acceptable reliability (see Peter 1979). The coefficient α estimate of internal consistency for acquiescence was .67. In addition, composite reliability scores based on the item loadings from confirmatory factor models ranged from .68 to .89 (for these same variables). Before performing more formal tests of discriminant validity, we performed exploratory factor analysis on the two subsets of measures used in the measurement model analyses described previously. No substantial cross-loadings were observed among items across the different constructs. We assessed discriminant validity using the procedures recommended by Gerbing and Anderson (1988). First, we ran confirmatory factor analysis models with two factors involving each possible pair of constructs. In the first model, we constrained the ϕ coefficient to 1.0 and then estimated it freely in the second model. In all cases, we found the model with the free ϕ coefficient to be superior to the model with the fixed ϕ coefficient. Second, we constructed confidence intervals around the ϕ coefficient estimates using two times the standard error of the ϕ coefficient for each pair of constructs. In none of the cases did the confidence interval contain 1.0, which provided additional evidence of discriminant validity. The results of these analyses are summarized in Appendix B.

In an additional effort to assess the content validity of the measurement scales, we conducted a smaller-scale study in which we reevaluated the measures using procedures similar to those recommended by Zaichkowsky (1985) and employed in several studies in the marketing literature (e.g., Netemeyer et al. 1997; Netemeyer, Burton, and Lichtenstein 1995; Saxe and Weitz 1985). Specifically, we administered a questionnaire to expert judges with experience doing key informant research, asking them to rate the degree to which each item represented the constructs in our model. Using the procedure recommended by Zaichkowsky (1985), the panel of 26 expert judges rated each item as "clearly representative," "somewhat representative," or "not representative" of the construct of interest. Across all items, mean responses were greater than 2.0, and in no case did fewer than 80% of judges indicate their perception that the item was at least somewhat representative. This 80% level of agreement is consistent with that used by Zaichkowsky (1985) in determining representativeness of items.

Analyses and Results

The summary statistics and intercorrelations for all variables included in the study are shown in Table 1. Moderated regression analysis was used to assess support for individual hypotheses, including the hypothesized moderation effects for individualism/collectivism and marketing program orientation (see Arnold 1982; Barron and Kenny 1986).[4] In an initial series of analyses, multicollinearity was found between the interaction terms and their underlying components in tests of H_4 and H_6. To address this problem, variables were mean-centered before forming the interaction terms, a procedure recommended to reduce the problems associated with multicollinearity (see Aiken and West 1991; Jaccard, Turrisi, and Wan 1990). As a check on the effect of this procedure, the variance inflation factors (VIFs) for all variables were computed. The largest of the resulting VIFs was 1.35, well below the maximum level of 10.0 suggested by Mason and Perreault (1991; see also Neter, Wasserman, and Kutner 1990, p. 409).

Separate regression analyses were performed for each of the three dependent variables (i.e., acquiescence, cooperation, and performance). Three control variables representing the subsidiary's size (sales in dollars) and industry (two dummy variables representing durables, nondurables, and services) were also included in all three regression models (see Moorman 1995). Product terms using composite indices that represented the moderator variables and appropriate main effect variables were also included. Details of the results of these tests are discussed subsequently. Note that plots of residuals for all three equations indicated no outlying observations, and a normal probability plot suggested no violation of the normality assumption (Neter, Wasserman, and Kutner 1990). The results for all three models are presented in Table 2.

Effects on Acquiescence

H_1 and H_2 predict relationships with acquiescence as an outcome. Table 2, Part A, presents the results of the regression equations used to test these hypotheses. Standardized parameter estimates are provided; the associated t-values are shown in parentheses. As shown, the coefficient for dependence is not significant, indicating a lack of support for H_1. However, the coefficient for trust is significant (t = 6.53, $p \leq .01$) and in the hypothesized direction, providing support for H_2. Thus, it appears that trust has a significant effect on acquiescence, at least for our sample of marketing managers.

Effects on Cooperation

H_3 and H_4 predict relationships with the subsidiary's marketing function cooperation as an outcome. The results of the regression equations used to test these hypotheses are presented in Table 2, Part B. Regarding H_3, trust is shown to be significantly associated with the subsidiary's marketing function's level of cooperation (t = 7.56, $p \leq .01$). For H_4, the coefficient for the interaction term is also significant (t = –2.04) and in the direction hypothesized.

In an effort to understand the interaction effect, we followed the slope analysis procedure described by Aiken and West (1991). According to Aiken and West, the presence of the interaction term is evidenced by the significance of its coefficient. By means of the slope analysis procedure, the relationship between trust and cooperation can be understood at different levels of individualism/collectivism. The equation is calculated using values of individualism/collectivism one standard deviation below the mean, at the mean, and then one standard deviation above the mean. We substituted high, moderate, and low values of individualism/collectivism in a model that also included main effects of trust and individualism/collectivism. This analysis revealed that at high levels of individualism, the relationship between

TABLE 1
Variable Means, Standard Deviations, and Intercorrelations

Variable	1	2	3	4	5	6	7
1. Vertical dependence	1						
2. Trust	.26**	1					
3. Individualism/collectivism[a]	–.16	–.23*	1				
4. Acquiescence	.15	.53**	–.13	1			
5. Cooperation	.44**	.65**	–.18*	.38**	1		
6. Performance	.31	.29**	–.06	.16	.25**	1	
7. Market program orientation[a]	–.28**	–.05	.13	–.06	–.11	–.05	1
Mean	4.51	4.87	42.90	4.90	4.75	4.66	3.20
Standard deviation	1.28	1.09	27.78	1.00	1.21	1.37	.71

[a]These variables were included in analyses only when combined with other variables as interaction terms.
*$p \leq .05$.
**$p \leq .01$.

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[4]We replicated the moderated regression analyses using path analysis that employed composite scores as indicators of all constructs (setting error terms at 1 – square root of the reliability for constructs with reflective indicators). We estimated interaction effects in the path analysis using composite score product terms (see Grewal, Monroe, and Krishnan 1998).

trust and cooperation is weakest (β = .439), and at low levels, the relationship is strongest (β = .730). These results support H_4.

Performance as an Outcome

H_5 and H_6 predict relationships with product performance in the subsidiary's market. The regression results using performance as the dependent variable are shown in Table 2, Part C. As indicated in Table 2, the data support H_5 and H_6. A significant coefficient was found for the main effect of cooperation (t = 2.62, $p \leq .01$), and a marginally significant coefficient was found for the interaction of marketing program orientation and acquiescence (t = –1.93, $p \leq .056$). That is, in support of H_5, cooperation had a direct effect on performance, as predicted. The negative coefficient for the marketing program orientation × acquiescence interaction term suggests that the greater the extent to which the marketing program elements for a given product are customized by the individual subsidiary for its market, the weaker is the relationship between acquiescence and performance of that product in the subsidiary's market. Again, the nature of this significant interaction was examined. The slope analysis revealed that at high levels of standardization (low levels of customization), the relationship between acquiescence and performance is strongest (β = .24, t = 1.92), and at low levels of standardization, it is weakest (β = –.092, t = –.77). Thus, and as predicted, it appears that acquiescence becomes increasingly important for performance as the ele-

TABLE 2
Tests of Hypothesized Relationships

A: Dependent Variable: Acquiescence

Independent Variables	Prediction	Parameter Estimate	t-Value
Dependence	(H_1, +)	–.051	–.62
Trust	(H_2, +)	.553**	6.53
Control Variables			
Subsidiary's sales		–.091	–1.11
Industry dummy variable 1		.186	2.27
Industry dummy variable 2		.010	.13
F-statistic		9.472**	
Adjusted R^2		.27	

B: Dependent Variable: Cooperation

Independent Variables	Prediction	Parameter Estimate	t-Value
Trust	(H_3, +)	.584**	7.56
Individualism		–.091	–1.20
Trust × individualism	(H_4, –)	–.152*	–2.04
Control Variables			
Subsidiary's sales		.122	1.61
Industry dummy variable 1		–.105	–1.42
Industry dummy variable 2		.018	.25
F-statistic		13.71**	
Adjusted R^2		.40	

C: Dependent Variable: Performance

Independent Variables	Prediction	Parameter Estimate	t-Value
Cooperation	(H_5, +)	.260**	2.62
Acquiescence		–.002	–.02
Marketing program orientation		.013	.14
Acquiescence × marketing program orientation	(H_6, –)	–.175	–1.93
Control Variables			
Subsidiary's sales		.160	1.73
Industry dummy variable 1		.141	1.52
Industry dummy variable 2		.072	.80
F-statistic		3.01**	
Adjusted R^2		.11	

*$p \leq .05$.
**$p \leq .01$.

ments of the marketing program for a product are standardized across geographic markets.

Summary and General Discussion

A key objective of this study was to understand the antecedents of relational behaviors on the part of the marketing operations at a global firm's individual foreign subsidiaries. The conceptual model, derived largely from the relationship marketing literature, suggested two such antecedents: the dependence of one party on the other and the trust that one party has in the other (see Anderson and Narus 1990; Bendapudi and Berry 1997; Makoba 1993; Morgan and Hunt 1994). The findings reported here emphasize the importance of dedication-based relationships. That is, trust was found to be significantly associated with both acquiescence and cooperation, whereas dependence was not found to be significantly associated with acquiescence.

The influence of national culture on headquarters–subsidiary marketing function relationships was also explored. On the basis of prior findings (see Williams, Han, and Qualls 1998) regarding the receptiveness of managers in collectivistic cultures to forms of bonding that focus more on personal factors such as trust than on more economic-type rewards, we predicted a moderating effect of individualism/collectivism (Hofstede 1980) on the trust–cooperation relationship (Williams, Han, and Qualls 1998). Our findings suggest that in more collectivistic cultures, trust takes on greater importance in motivating cooperative behaviors.

Finally, the research extends traditional relationship marketing frameworks to explore the influence of relational behaviors on self-reports of product performance in individual foreign markets. Specifically, our findings indicate that there is a positive association between cooperative behaviors on the part of the subsidiary's marketing managers surveyed and the ability of a product to achieve its objectives in the subsidiary's individual market. In addition, we found that acquiescent behaviors take on greater importance to the extent that marketing program policies and procedures are standardized. Following a brief description of limitations of this research, we discuss the implications of our findings for MNC strategy and for further research.

Limitations

Although the survey was conducted among marketing managers who were knowledgeable about the brand or product management activities of the foreign subsidiaries and who interacted regularly with the marketing operation at corporate headquarters, this research suffers from some of the limitations associated with mail surveys. For example, although steps were taken to ensure that the correct person was identified as the key informant, the potential for single-respondent bias still exists. Related to this issue of single-respondent bias is the use of perceptual measures for operationalizing the constructs. Other concerns related to the measures are that subjective performance measures were obtained and that these performance measures were obtained at the same time as other construct indicators.[5] Additional objective firm performance measures and/or external secondary data would have been helpful in validating performance. However, brand performance in foreign markets is not reported widely, and therefore extensive secondary data are not available, particularly when needed for such a large and varied group of individual products and markets. It is also possible that our measures do not fully capture the concepts under study, and caution should be used in interpreting our findings. However, as discussed in our methods section, standard analyses designed to assess reliability and discriminant validity were employed, and our measures were found to be adequate.

Given the correlational design, it is not appropriate to make causal statements regarding the relationships observed among variables. Although we observed associations among certain variables, it is impossible to draw conclusions of causality. Moreover, the potential exists for common methods variance as an explanation for the relationships observed. We investigated the effects of common methods bias using the procedures described by Netemeyer and colleagues (1997, p. 96). In these analyses, we formed two structural equation models using constructs with multiple indicators on the basis of the order of hypotheses (i.e., H_1–H_3 and H_5). A breakdown using two models was needed because of the limited sample size. For both models, we added a "same-source" factor to the indicators of all constructs. We compared an unconstrained model, in which the same-source factor loadings are estimated freely, with a constrained model, in which the loadings are constrained to zero. These analyses resulted in significant differences between the constrained and unconstrained models for both sets of constructs, which suggests the presence of some methods bias ($\chi^2_{diff} = 269.18$, $d.f._{diff} = 18$ for the first model and $\chi^2_{diff} = 193.11$, $d.f._{diff} = 14$ for the second model). However, the strength of the hypothesized paths remained consistent with our findings, even in the presence of this bias.

An additional limitation is the constraint placed on the nationality of the headquarters organization. The sample was limited to foreign subsidiaries of U.S.-based MNCs only, which made it difficult to generalize results across firms based in other countries. However, the study was limited to U.S.-based firms to control for the effects of parent-firm nationality, which might affect management styles, as well as the structure of product management activities. For example, parent-dominated relationships as opposed to more balanced or subsidiary-dominated relationships may be more common among firms based outside of the U.S. Future studies that expand their scope across firms based in other countries should attempt to assess possible influences on firm structure, as well as the organization of marketing activities.

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[5] As acknowledged previously, the collection of the performance measure contiguous with the antecedent variables is a limitation. In the spirit of providing additional evidence for the proposed model, follow-up performance data were obtained six months later from a single mailing from 21 of the original subsidiary marketing managers. Correlations between this second-wave relative performance measure (see Moorman and Miner 1997) and trust and cooperation were .30 ($p \leq .10$, one-tailed) and .52 ($p \leq .05$), respectively. Notably, these modest but significant estimates provide some additional evidence regarding the role of trust and cooperation in headquarters–subsidiary relationships and eventual product performance in foreign markets

Importance of Relational Behaviors for Performance

The importance of relational behaviors on the part of the subsidiary's marketing operation for product performance in the subsidiary's market was hypothesized in the conceptual framework tested here. Although cooperation was found to be positively associated with the self-reported measure of product performance, acquiescence was not. Acquiescence was, however, found to become increasingly important as the firm attempts to standardize a product's marketing program across geographic markets. Although prior applications of the relationship marketing perspective have assessed behavioral outcomes, such as a reduced propensity to leave a relationship (Morgan and Hunt 1994) and expectations of continuity in the relationship (Garbarino and Johnson 1999; Heide and John 1990), performance implications resulting from those behaviors have not been widely assessed. One exception is the study reported by Lusch and Brown (1996), who examine performance in terms of the efficiency and productivity of wholesale–distributor relationships and find that it is not significantly associated with relational behavior. In addition, supplier performance has been found to be enhanced when suppliers pursue long-term as opposed to short-term relationships with customers (Cannon and Perreault 1999; Kalwani and Narayandas 1995; Naidu et al. 1999). Finally, Jap (1999) reports that coordination efforts on the part of a dyad, rather than one partner, can result in higher levels of profitability. In the study reported here, the emphasis is more specifically on performance outcomes resulting from relational behaviors on the part of the subsidiary's marketing operations. As such, our findings provide evidence of benefits from fostering successful relationships among a firm's subunits.

The finding that acquiescence is not significantly associated with performance, except in situations in which the headquarters is attempting to standardize the marketing program for the product, led us to consider factors that might explain this result. The arguments of Janis (1972) regarding the effects of "groupthink" could be relevant. Given that the subsidiaries operate as part of a system of subunits, acquiescence among all subsidiaries could characterize the overall MNC. According to Janis (1972), acquiescence among a group could lead to groupthink, such that creative processes may shut down; this has, in turn, a detrimental influence on performance. Given that our sample is primarily composed of only one subsidiary for each MNC, this is an unlikely explanation. Future studies involving multiple subunits for a set of MNCs would allow for an assessment of multiple subsidiaries, so that performance outcomes based on group-level characteristics could be investigated.

Effects of Trust Versus Dependence

One possible explanation for the significance of trust compared with dependence in influencing relational behavior may lie in the subsidiary's marketing operation's perception of uncertainty in its environment as a result of a perceived power imbalance. It has been suggested that a more dependent party may feel uncertain (Etgar and Valency 1983). In addition, in relationships in which one party is more dependent, the perceived individual payoffs for relational behaviors might be lower for the weaker party (Lusch and Brown 1996).

In prior research on relationships in channels, similar evidence has been found regarding stronger effects of trust than of dependence. Specifically, Lusch and Brown (1996) find that the unilateral dependence of a wholesaler on a supplier has no impact on relational behavior. In addition, Lusch and Brown (1996) find that even when a wholesaler is dependent on a supplier, normative contracting rather than explicit and contractual governing mechanisms leads to relational behaviors. Moreover, Gundlach, Achrol, and Mentzer (1995) suggest that governance based on social norms rather than "law" may be more effective in long-term relationships. Bucklin and Sengupta (1992) also find that power imbalance in an alliance reduces the effectiveness of the alliance. Finally, Anderson and Narus (1990) find that dependence, through its effect on the use of influence by a partner, leads to conflict in relationships. Moreover, the literature on power in channels of distribution from nearly two decades ago also seems to indicate that dependence may not lead to perceptions of power and thus may not have the predicted positive effect on acquiescence. In particular, Gaski (1984, p. 23), in his review of studies on power and conflict in marketing channels, concludes that there is "little evidence to support a strong relationship between power and dependence in marketing channels."

A distinction between dependence and trust, which could be key to understanding our findings, is the observation that dependence leads to an increase in uncertainty whereas trust may lead to a decrease in uncertainty. Morgan and Hunt (1994) find a negative relationship between trust and uncertainty in marketing relationships. Similarly, Beckett-Camarata, Camarata, and Barker (1998) suggest that alliances, in which firms partner for a long-term strategic purpose, are characterized by greater uncertainty than short-term relationships. This uncertainty is due to the greater likelihood in the long run than in the short run that market conditions will change and the weaker party's perception that it may be unable to control its position in the future. Further research could be undertaken in which the degree of ownership or contractual ties between parties in different contexts is measured and the role of dependence in successful relationships is explored. In addition, the distinction between unilateral and bilateral dependence (see Lusch and Brown 1996) provides a direction for further research, and the focus on only unilateral dependence here represents a potential limitation. Variation in bilateral dependence might be expected in relationships between headquarters and subsidiaries, and future studies could similarly explore the effects of bilateral dependence on both the subsidiary's and the headquarters' behavior.[6]

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[6] To account for the possible effects of the headquarters' dependence on the subsidiary, we gathered secondary data on the worldwide sales figures of each multinational firm represented in our sample for the period in which the subsidiary's sales information was provided We then calculated the percentage of worldwide sales accounted for by each subsidiary for that period and reran our analyses controlling for this ratio as well as the industry code variables already included in the models. In all three regression models, among the sample for which we were able to obtain worldwide sales information (n = 103), the results were consistent with those reported in the article. That is, controlling for the proportion of firm sales represented by each subsidiary, we found support for H_2–H_6 (t-values for these coefficients = 6 07, 7 18, –2.10, 3.54, and –2 40, respectively)

It is also possible that acquiescence may not have resulted from high levels of dependence because of contingencies not considered here. For example, the nature of marketing program requests being given to the subsidiary might be responsible for the levels of acquiescence. If subsidiaries perceive requests to be potentially detrimental, the subsidiaries may be less likely to comply with the requests. However, our belief is that if the headquarters has consistently handed down requests that are viewed as potentially detrimental to the subsidiary, the trust in the headquarters will be low. Research in marketing relationships suggests that past experiences are related to trust (Anderson and Narus 1990; Morgan and Hunt 1994).

Finally, we performed additional analyses to explore the possibility that dependence has a different relationship with acquiescence than predicted. We considered the possibility that cooperation might moderate the relationship between dependence and acquiescence, given the possibility that a more cooperative environment might enhance the likelihood that dependence will lead to acquiescence. Using regression analysis, we found the interaction between cooperation and dependence to be nonsignificant ($t = -.50$, $p \leq .62$).

Effects of National Culture

The present findings support the premise that cultural differences affect the relationship between trust and relational behaviors. As such, a multinational firm may take different approaches to managing relationships among marketing operations in highly individualistic cultures versus in collectivistic cultures. Given the findings regarding differences among people in individualistic versus collectivistic cultures, differences in attitudes toward relationships and relationship marketing efforts in different cultures might be expected (Williams, Han, and Qualls 1998). Additional research is also needed to investigate how different approaches to managing marketing relationships in these different cultures may influence performance in different markets.

Global Marketing Program Orientation

One additional result from our effort was the finding that a subsidiary's marketing operation's acquiescence to the marketing operation at a global firm's headquarters becomes increasingly important as the firm attempts to standardize the elements of the marketing program across geographic markets (H_6). As firms pursue global standardization of the marketing activities, our results suggest that performance is even more dependent on outlying unit acquiescence to programs and directives. Further research should explore more explicitly the influence of a firm's global marketing strategy on its relationships with its foreign subsidiaries.

APPENDIX A
Final Scale Items

Vertical Dependence (Adapted from Astley and Zajac 1990; Cronbach's $\alpha = .78$)

Please indicate the extent to which each of the following statements describes your subsidiary's marketing operation using a seven-point scale, where 1 = "to a very little extent" and 7 = "to a very great extent."

- To perform its own tasks effectively, the marketing operation at your subsidiary relies on the effective functioning of the marketing operation at headquarters.
- Knowledge gained in the marketing operation at headquarters is transferred to the marketing operation at your subsidiary.
- Work in the marketing operation at your subsidiary is connected to the work of the marketing operation at headquarters.

Trust (Adapted from Doney and Cannon 1997; Cronbach's $\alpha = .84$)

Please rate your agreement with each of the following statements regarding the marketing operation at headquarters using a seven-point scale, where 1 = "to a very little extent" and 7 = "to a very great extent."

- The marketing operation at headquarters keeps promises it makes to our marketing operation.
- We believe the information that the marketing operation at headquarters provides to us.
- The marketing operation at headquarters is genuinely concerned with the success of the marketing operation at this subsidiary.
- The marketing operation at headquarters considers our welfare when making marketing decisions regarding this market.
- Individuals in the marketing operation at headquarters are trustworthy.
- Individuals in the marketing operation at headquarters are not always honest with us. (r)

Acquiescence (Adapted from Kumar, Stern, and Achrol 1992; Cronbach's $\alpha = .67$)

Please rate your agreement with each of the following statements regarding your subsidiary's brand or product management activities using a seven-point scale, where 1 = "to a very little extent" and 7 = "to a very great extent."

- Generally, your marketing operation conforms to headquarters' accepted procedures.
- Your marketing operation has had trouble implementing marketing programs that headquarters recommends. (r)
- Your marketing operation has frequently gone against the terms contained in headquarters' marketing operation directives. (r)
- Your marketing operation accurately performs requests of the marketing operation at headquarters in a timely fashion.

Cooperation (Adapted from Song, Montoya-Weiss, and Schmidt 1997; Cronbach's $\alpha = .86$)

Please rate your agreement with each of the following statements regarding your subsidiary's brand or product management activities using a seven-point scale, where 1 = "to a very little extent" and 7 = "to a very great extent."

- People from the marketing operations at both headquarters and your subsidiary regularly interact.
- There is open communication between the marketing operations at headquarters and your subsidiary.

APPENDIX A
Continued

- The marketing operations at headquarters and your subsidiary have similar goals.
- Overall, your subsidiary's marketing operation is satisfied with its interaction with the marketing operation at headquarters.
- There is a give-and-take relationship between the marketing operations at headquarters and your subsidiary.

Performance (Adapted from Moorman and Miner 1997; Cronbach's α = .90)

Now, rate the extent to which the brand/product you indicated on page 1 has achieved the following outcomes relative to its original objectives for the most recent annual fiscal period using a seven-point scale, where 1 = "to a very little extent" and 7 = "to a very great extent."

- Market share
- Sales
- Return on assets
- Profit margin
- Return on investment

Global Marketing Program Orientation

Think about the brand/product you indicated on page 1. For each of the following marketing program elements, please approximate the extent to which headquarters has developed standardized processes that it requires you to use in your market versus allowing your subsidiary's marketing operation to develop and implement market- or country-specific marketing processes. (Check "N/A" if an item does not apply.) Scale: 1 = 100% standardized by headquarters' marketing operation, 2 = 75% standardized/25% customized, 3 = 50% standardized/50% customized, 4 = 25% standardized/75% customized, 5 = 100% customized by subsidiary marketing operation.

a. Product design
b. Product positioning
c. Brand name used
d. Packaging
e. Price
f. Basic advertising message
g. Creative expression
h. Sales promotion
i. Media allocation
j. Salesforce responsibilities
k. Management of salesforce
l. Use of middlemen
m. Type of retail outlet
n. Customer service

Notes: (r) = reverse-coded.

APPENDIX B
Discriminant Validity Analysis for Multiple-Item Scales

	Trust	Vertical Dependence	Acquiescence	Cooperation	Performance
Trust	.50				
Vertical dependence	.30 99.71 88.88	.55			
Acquiescence	.62 22.88 70.60	.22 73.26 36.14	.42		
Cooperation	.79 46.94 157.78	.37 33.14 62.10	.36 33.14 62.10	.56	
Performance	.29 263.05 281.83	.37 112.30 192.43	.20 80.81 208.94	.24 285.58 230.06	.64

Notes: Entries below the diagonal show (1) ϕ coefficients (reflecting correlations among constructs), (2) difference in chi-square from fixed (ϕ = 1.00) model and free (ϕ estimated) model, and (3) chi-square for free model. Shared variance values are provided on the diagonal.

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Kersi D. Antia & Gary L. Frazier

The Severity of Contract Enforcement in Interfirm Channel Relationships

Little is known about how channel members react to violations of explicit contracts. The authors develop and test an integrative conceptual framework that focuses on the severity of the enforcement response in channel relationships. The empirical results provide evidence of discerning enforcement practices by channel members, reflecting channel system, network, and dyadic concerns.

The importance of explicit contracts in the management of channel relationships has been recognized for quite some time (see Frazier 1983). Accordingly, many marketing scholars have conducted research on the deployment (Jeuland and Shugan 1983; Lal 1990; Moorthy 1988) and use (Lusch and Brown 1996) of explicit contracts. No matter how well-designed, however, contracts still may be violated (Hennart 1993; Williamson 1996). As Rousseau and Parks (1993, p. 2) indicate, "Contracts are fundamental to the ... actions of organizations. They imply cooperation and consensus, but often engender dispute and disagreement."

The integrity of firms' explicit contracts and the effectiveness of their coordination efforts depend to a large extent on sound enforcement practices (see Stern, El-Ansary, and Coughlan 1996). Yet few studies in the marketing literature have addressed this important issue. Dutta, Bergen, and John's (1994) analytical findings suggest that enforcement is more severe when the importance of agent services is high, agents are offered higher margins, and the principal's commitment to the channel is high. Bergen, Heide, and Dutta's (1998) empirical results lend further support to these findings.

The purpose of this study is to promote the understanding of the contract enforcement practices of channel members. On the basis of an integration of transaction cost economics (TCE), the relational exchange paradigm, and network theory, we develop a conceptual framework that explains the severity of the principal's disciplinary response to an agent's violation of a contractual obligation.[1] Prestudy interviews with personnel in more than 20 supplier and franchisor organizations also contributed to the conceptualization. The framework was designed to apply to any channel context in which explicit contracts exist between channel members. Our test of the conceptual framework is based on a field survey of franchisors in six industries.

Prior studies on contract enforcement in distribution channels, though they provide valuable insights, have limited their focus to a single type of violation (i.e., resale restrictions) and a single enforcement response by the principal—termination (Bergen, Heide, and Dutta 1998; Dutta, Bergen, and John 1994). Our field study is the first to examine a range of actual contract violations by agents and a continuum of enforcement severity by principals in response. Thus, we significantly extend the empirical domain of enforcement. An additional limitation of extant channels research arises from its overwhelming focus on the characteristics of the focal dyad as an explanation for principal–agent actions. This almost exclusive attention to the focal relationship fails to acknowledge that interfirm relationships are affected not only by direct dyadic considerations but also by channel system and network issues (see Heide and John 1992). Accordingly, we also consider contract enforcement drivers at the channel system and network levels of analysis. Our examination of network effects appears especially valuable considering their likely importance in interfirm channel relationships and the sparse attention devoted to them in empirical channels research (see Anderson, Håkansson, and Johanson 1994).

Conceptual Framework

Development of the Conceptual Framework

Contract enforcement refers to the severity of a principal's disciplinary response to an agent's violation of a contractual

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[1] Henceforth, we use the term "principal" to denote the party offering the contract and the term "agent" to identify the party accepting it.

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obligation.[2] The disciplinary response can range from lenient actions, such as ignoring the violation entirely or making only mild and informal attempts to gain compliance, to tough and punitive actions, such as strict cease-and-desist orders or termination proceedings. A thorough understanding of this complex decision requires a multilevel approach informed by complementary theories.

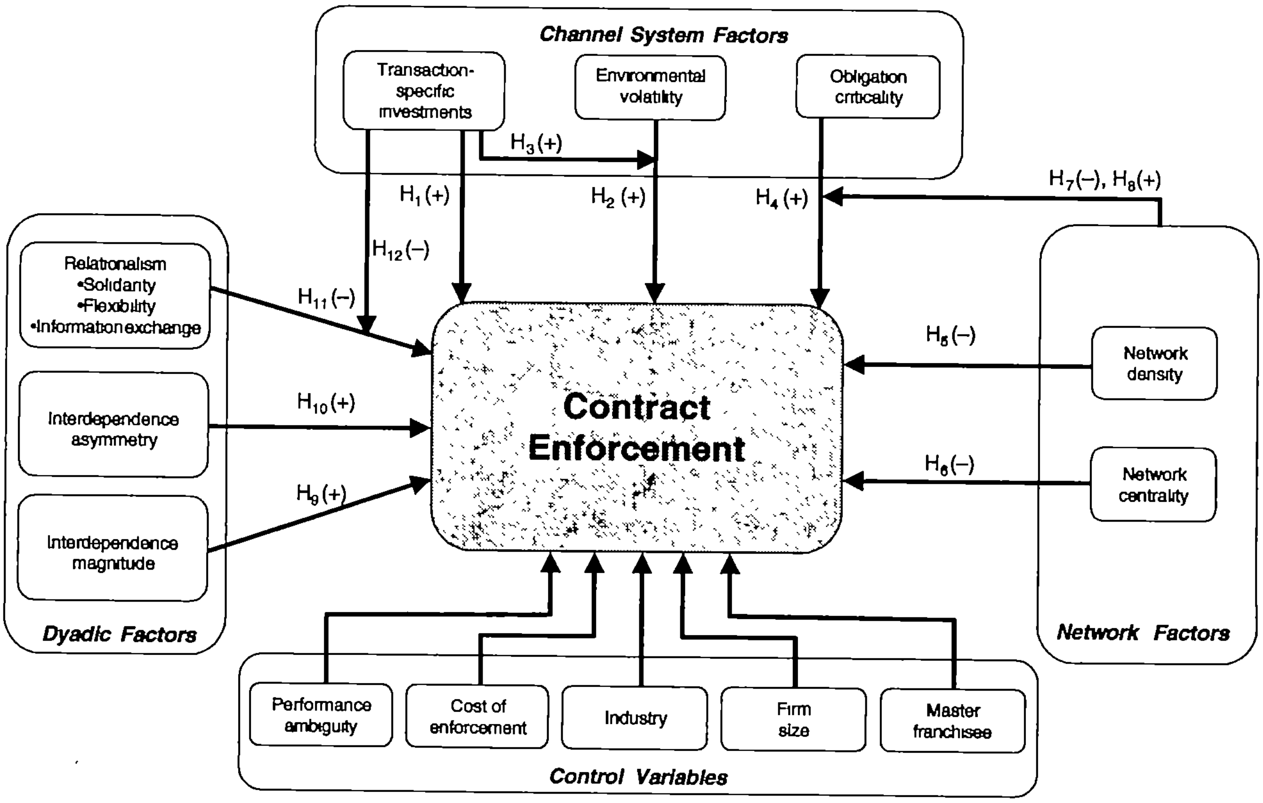
We take the perspective of the principal making the contract enforcement decision. From the outset, we were influenced by research that stresses the need to examine characteristics outside the bounds of the channel dyad. As Heide (1994, p. 81) emphasizes, "individual relationships are embedded in a context of other relationships that could have governance implications." Factors influencing relationships among the principal and agents that constitute the general channel system, relationships among the agents themselves, and the relationship between the principal and the focal agent that violated the contract all could affect the principal's contract enforcement decision (see Macaulay 1963).

Using this foundation, we developed the conceptual framework, displayed in Figure 1, through an integration of TCE, the relational exchange paradigm, and network theory. Individual contract violations and subsequent enforcement actions may influence governance costs across all agents, not just with the focal agent (see Williamson 1996, p. 64). Accordingly, we examine transaction-specific investments (TSIs), environmental volatility, and the criticality of the violated obligation at the channel system level of analysis, combining a TCE-based perspective with a "task-characteristic" variant of the relational exchange paradigm (Thibaut and Kelley 1959). We include the relationalism and interdependence constructs at the dyadic level. In addition, on the basis of network theory, we examine two elements of the informal network among agents—network density and network centrality—that may affect the contract enforcement decision. Where appropriate, we also consider moderator effects among the constructs. Each of the theoretical perspectives we apply has a cost–benefit orientation as its basis. Specifically, the principal is hypothesized to consider the relative costs incurred in and benefits attributable to undertaking particular enforcement responses.

Research Hypotheses

Channel system level of analysis. The principal's channel system comprises the organized collection of channel members (agents) performing activities required to link producers with end customers (see Berman 1996). How violations of contracts affect relationships the principal has with associated agents is of central interest at this level of analysis. Principals may react severely to contract violations that jeopardize the integrity of their channel policies and system performance and/or raise systemic transaction costs (see Stern, El-Ansary, and Coughlan 1996).

FIGURE 1
Conceptual Framework



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[2] Contract violations may result from an agent's lack of awareness of the obligation, insufficient agent resources to fulfill the obligation, or honest attempts to react to unforeseen circumstances; violations need not imply opportunism.

Transaction-specific investments are investments that cannot be redeployed from existing uses and users except at a significant loss of productive value (Williamson 1996). They can be specific to both individual agents and channel systems (see Erramilli and Rao 1993; Jones 1987).[3] As Fein and Anderson (1997, p. 23) indicate, "Transaction specific investments ... can be made in multiple relationships simultaneously, though when made, they are difficult to redeploy to other relationships." Our focus is TSIs made by the principal that are specific to the channel system, such as training programs and time spent with agents in developing strategic plans. The immobile nature of these investments and the serious ramifications of the systemwide asset devaluation that could arise from contract violations by individual agents are likely to make systemic TSIs highly salient to the principal's enforcement response.

The principal's TSIs in its channel system should build capabilities among associated agents, which involve the knowledge and skills necessary to serve end customers effectively (see Day 1994; Nelson and Winter 1982). Principals that have committed significant systemic TSIs should be particularly sensitive about contract violations. If an individual agent's shirking goes unabated, the incentive for other agents in the channel system to follow suit may increase. "Free-riding" tendencies also may be heightened in such cases (see Mathewson and Winter 1984). Without the full commitment of agents to perform all their responsibilities, systemwide capabilities and the TSIs underlying them could be eroded, which would thereby increase transaction costs, or the costs of governing the channel system (see Day 1994). Thus, when systemic TSIs are high, the cost of an individual agent's violation may be borne by the entire system (Klein 1996). In such conditions, in the interest of general deterrence (Gibbs 1975) and to safeguard distinctive capabilities and the specific investments that led to them, the principal is expected to take a relatively severe enforcement response (Williamson 1996).[4]

> H_1: The principal's TSIs in the channel system are related positively to contract enforcement.

Environmental volatility is the extent to which the rate of change in the external environment is rapid and unpredictable (see Achrol and Stern 1988). We consider the systemwide volatility the principal faces within its overall business. Sudden changes in customer preferences, unexpected new product development by competitors, and similar systemwide shocks are expected to influence relationships within the channel system more than relatively localized conditions in a focal agent's trading area (see Pfeffer and Salancik 1978).

When rapid and unpredictable changes occur with high frequency in an industry, a greater likelihood exists that some changes will be needed to the originally specified contract (Williamson 1996). Some agents, lacking the broader perspective of the principal, may attempt to react to systemwide volatility in a manner best suited to their local needs. These locally optimal responses, however, may adversely affect the performance of the channel system while heightening transaction costs. As a result, when volatility is high, the principal likely will want to control any changes made to the contract and implement such changes in a uniform manner (Anderson 1985). It is not the principal's opposition to change but rather the need to bring about the change in a coordinated manner that may drive the principal to maintain control.

> H_2: Environmental volatility within the channel system is related positively to contract enforcement.

The risks and costs of improper realignment by independent agent actions in volatile environments are likely to become even more pronounced when TSIs are high in the channel system. The potential for improper realignment, if realized, would likely result in significant dilution and possible loss of the principal's TSIs. To preclude, or at least minimize, the possibility of such losses, the principal's imperative for control may increase when TSIs are significant (Anderson 1985). Therefore, the presence of high TSIs may strengthen the positive relationship between volatility and the severity of the enforcement response. In such conditions, a stricter response may help maintain the principal's control over its agents, thereby helping the principal safeguard specialized investments, as well as effectively and efficiently adapt to new and shifting conditions (Anderson 1985; see also Williamson 1985, p. 60).

> H_3. The greater the principal's TSIs, the stronger is the positive relationship between environmental volatility and contract enforcement.

Obligation criticality is the importance attached by the principal to the contractual obligation violated by the agent. Certain obligations are more critical to the principal than others are, especially when functions vital to the very survival of the principal's channel system are involved (e.g., cleanliness standards for restaurants) (see Rubin 1990). The principal is likely to take strong disciplinary action against an agent that violates a highly critical contractual obligation. Maintaining full compliance with vital routines is essential to the performance of the channel system (see Nelson and Winter 1982). A severe enforcement response is likely to reinforce to the focal agent and other members of the channel system the importance of effectively carrying out the obligation, thereby reducing the likelihood of future violations and the corresponding costs of governing relationships (Hunt and Vasquez-Parraga 1993).

> H_4: Obligation criticality is related positively to contract enforcement.

Network level of analysis. The network level of analysis addresses the impact of the relationships among agents on the principal's enforcement decision. Formal networks among agents (e.g., the collection of franchisees within a franchise) comprise consciously planned and designed sets of relations (see Krackhardt and Hansen 1993). Such networks help identify the relevant participants but are gross indicators, at best, of the actual interaction shared by them. In contrast, our study focuses on the spontaneous, as opposed to consciously planned, relationships that exist among agents, namely, the informal network ties that "shadow formally prescribed work flow and authority relationships" (Brass and Burkhardt 1993, p. 444). We focus on the density of the informal network and the centrality of the focal agent in that network.

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[3] Just as the principal is concerned that its investments in an individual agent may not be transferable to other relationships, the principal's systemwide investments are specific to the system if they cannot be redeployed to another system without significant loss of value.

[4] It is possible that principals making significant nonspecific investments in their channel systems also will take a relatively severe enforcement response. However, the relative ease of redeploying generalized investments to other applications and relationships may lessen their impact on contract enforcement, at least relative to TSIs, because the need for protection and coordination may not be as great (see Williamson 1985).

Network density reflects the average strength of relations in a network (see Burt 1992). High levels of information sharing among members of a dense network result in shared beliefs (Friedkin 1984) and high levels of consensus among network participants (Galaskiewicz and Wasserman 1989; Meyer and Rowan 1977). Strongly interconnected agent networks can mount a concerted action against a principal (Fombrun 1986).

The principal is likely to be concerned about the way severe enforcement responses will be interpreted in a dense network. The principal's enforcement response and the reasons behind it are not completely observable to all agents in the channel system, who instead must rely on "constructed and shared interpretations" of the enforcement response (see Burt 1987). If the principal's enforcement response is viewed as too severe and unfair, a negative backlash against the principal could occur (Galaskiewicz 1985). The principal's goodwill and support among the collective group of agents could be reduced in such cases, which would hinder the principal's general coordination efforts (see Rowley 1997). Costs of governing relationships could significantly increase. As a result, the principal may decide to take a somewhat less severe enforcement response with a focal agent that is embedded in a dense network. The potential costs of retaliation are likely to mitigate potential benefits of a more severe enforcement response.[5]

H_5: Network density is inversely related to contract enforcement.

Network centrality refers to the strength of an individual agent's position in an agent network (Benson 1975). Whereas network density is concerned with interconnections among all agents, network centrality reflects the extent to which the focal agent that violates a contractual obligation has connections with other network participants. A central agent occupies a position of prominence for at least a portion of an agent network (Benson 1975), influencing information flows and behavioral expectations among other agents (Rowley 1997).

A principal is expected to weigh carefully how to react to a central agent's violation (Benson 1975). Because of its prominence within the network, a central agent could bias the views of other agents regarding the fairness of the principal's enforcement response. An enforcement response viewed as too severe by a central agent could influence not only its goodwill and support but also the way other agents aligned with the central agent react to the principal (see Ford, McDowell, and Tomkins 1996). Transaction costs attributable to coordinating relationships could increase significantly as a result. Such risks are likely to lead the principal to a more tempered enforcement response.

H_6: The network centrality of an agent is inversely related to contract enforcement.

We are not arguing that members of a dense agent network or a central agent will revolt against a principal that severely enforces its contracts. Rather, our point is simply that principals will take possible network effects into account when shaping their enforcement actions. Moreover, our comments regarding the principal's concerns about potential retaliation are not to suggest that agent violations will be ignored. The severity of enforcement still may be high but will be tempered compared with a loosely connected agent network or an agent with low centrality.

Channel system and network interactions. To maintain the integrity of channel policies and systemwide performance, the principal is likely to take a severe disciplinary response against an agent that has violated a critical obligation. However, the presence of high network density may curtail the severity of this response. Because of high levels of information sharing, members of a dense network tend to develop shared beliefs that do not always correspond with those of the principal (Sherif and Sherif 1969). Accordingly, agents in a dense network may not agree with the principal that the violated obligation is critical. Should the principal's response be viewed as unfair, a dense network may take a unified stance against the principal, which heightens transaction costs (see Oliver 1991). Thus, the potential risks of agent retaliation may counterbalance the benefits of a severe enforcement response.

H_7: The greater the level of network density, the weaker is the positive relationship between obligation criticality and contract enforcement.

Members of a dense network will not support a focal agent's violation of a critical obligation blindly, especially when the agent's actions may compromise the economic outcomes of everyone in the network (see Rubin 1990). However, even in cases in which there is general agreement within the network about the criticality of the violated obligation, the principal is likely to be wary about how its response will be perceived among members of a close-knit group (Galaskiewicz 1985). We are not arguing that violations of critical obligations will go unpunished in dense networks; rather, the severity of the principal's response to the violation of a critical obligation is likely to be relatively low in a dense network.

Network centrality also is expected to moderate the relationship between obligation criticality and contract enforcement but in a different direction than network density does. Although the principal generally may treat central agents with care, this may change when a central agent violates a critical obligation. Central agents serve as role models to associated agents (Wasserman and Galaskiewicz 1994), and by taking a severe enforcement response with a central agent, the principal would be sending a strong signal to all of its agents about the importance of fulfilling critical obligations (Benson 1975). The message would be that the obligation is so critical that even prominent agents in the network are severely disciplined if they violate it (Williamson 1983). The potential benefits of a severe enforcement response to maintain the integrity of channel policies and systemwide performance, including a possible reduction in future transaction costs, are likely to overcome the principal's concerns about retaliation.

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[5] Some scholars might argue that the principal, knowing that information about its enforcement action is likely to become public knowledge within a densely connected network, will adopt a severe enforcement approach (Rubin 1990). In our judgment, the principal's fear of retaliation from a dense network will dominate any potential signaling benefits. Our prestudy interviews helped us arrive at this judgment

H_8: The greater the level of an agent's network centrality, the stronger is the positive relationship between obligation criticality and contract enforcement.

The common underlying factor in both network density and network centrality is the principal's acknowledgment of the constraints imposed by informal network relations on its response strategies (Wasserman and Galaskiewicz 1994). What differs in these proposed moderator effects, however, is the focus of the principal's concern and the corresponding net benefits of alternative enforcement responses. In a highly dense network, the principal fears a concerted response by connected agents with strong ties. In contrast, the high-centrality situation poses the threat of alienating the single prominent agent and the subset of network participants influenced by it (Oliver 1991). Therefore, the risk of agent retaliation due to a highly severe enforcement response for a central agent appears to be lower. Furthermore, the signaling effects associated with taking a severe approach with a central agent that violates a critical obligation may produce important benefits for the principal, benefits that appear to be lacking in the case of a dense network.

Dyadic level of analysis. The focus at this level of analysis is the dyadic relationship between the principal and focal agent as opposed to the relationships within the agent network. The principal must protect the strength and value of its relationship with the focal agent while carefully considering its ability to take a severe enforcement approach. A firm's dependence in a channel relationship reflects its need to maintain the relationship to achieve its desired goals (Frazier 1983). *Interdependence magnitude* is the total extent to which each firm is dependent in a dyadic channel relationship (Gundlach and Cadotte 1994). When interdependence magnitude is high, firms rely heavily on each other for the performance of channel functions and access to scarce resources (Buchanan 1992; Lusch and Brown 1996).

Reciprocally interdependent parties can affect each other's outcomes by performing or failing to perform required actions (Cheng 1983). An agent's failure to fulfill contractual obligations can hinder the effective operation of the exchange, increase transaction costs, and result in a significant drop in the principal's ability to achieve its own goals. Therefore, an incentive may exist for the principal to take a severe enforcement response when interdependence magnitude is high in order to closely coordinate activities in and protect the value of the relationship (Gundlach and Cadotte 1994; Kumar, Scheer, and Steenkamp 1995). At the same time, the principal may be concerned about how the focal agent in a highly interdependent relationship will react to a relatively severe enforcement response. The agent may take reciprocal actions that could lead to a conflict spiral (see Kumar, Scheer, and Steenkamp 1998). In our judgment, the principal's need for due performance from an important focal agent will dominate any possible retaliation effect. After all, it was the focal agent's violation of an obligation that necessitated an enforcement response, not the principal's desire to influence the agent's autonomous decision making. The focal agent may acknowledge this and react accordingly.

H_9: Interdependence magnitude is related positively to contract enforcement.

Interdependence asymmetry is the comparative level of each firm's dependence in a channel relationship (Gundlach and Cadotte 1994; Lusch and Brown 1996). A power advantage exists for a firm when it has lower relative dependence (Frazier 1983). Firms with a power advantage may not be as bound by the constraints of maintaining dyadic relationships, because they have less incentive to continue such relationships should they fail to meet expectations (Lusch and Brown 1996). Moreover, firms with relatively low dependence compared with associated channel members may not be as concerned about the likelihood and consequences of retaliations to its actions (Kumar, Scheer, and Steenkamp 1995). Accordingly, the principal should take a more severe enforcement response when it enjoys a power advantage in a relationship. In such cases, the principal is likely to have the leverage to make a severe enforcement response work effectively with few associated risks (Buchanan 1992).

H_{10}: Interdependence asymmetry favoring the principal is related positively to contract enforcement.

Relationalism reflects the degree to which relational norms are established in a channel relationship (see Brown, Dev, and Lee 2000; Heide and John 1992). Three partially overlapping norm types have been used commonly to reflect relationalism's extent (see Lusch and Brown 1996; Noordeweir, John, and Nevin 1990). *Solidarity* is the willingness of the firms to strive for joint solutions and benefits, *flexibility* reflects the willingness of the firms to make alterations as circumstances change, and *information exchange* represents the willingness of the firms to provide information proactively that is useful to the other.

When norms of solidarity, flexibility, and information exchange are solidly entrenched in a relationship, more cooperative interaction among the firms is likely to result (Dwyer, Schurr, and Oh 1987; Jap and Ganesan 2000). This atmosphere of cooperation may lead the principal to take a less severe enforcement response.[6] The principal is likely to consider the strong ties that have been built up with the agent and the potential damage a severe enforcement action could have on those ties, including increased transaction costs. As Sitkin and Bies (1994) indicate, a severe enforcement response could lead to a more formalized relationship, with less give and take between the firms and less emphasis on joint outcomes. To avoid driving a wedge into a cooperative interaction and harming relational norms, the principal may take a less severe enforcement approach when relationalism is high.[7]

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[6] Work on psychological contracts suggests that when relationalism is high and a psychological contract is violated, a perception of betrayal may prompt the aggrieved principal to retaliate with a severe enforcement response (Parks 1997; Robinson 1996). In channel settings, however, attempts may be made to maintain strong channel relationships even when firms are dealing with contract violations, and termination is an extreme last resort (Dwyer, Schurr, and Oh 1987). As Parks (1997, p. 136) cautions in discussing psychological contracts and their impact, "We have not always differentiated between retribution at the interpersonal or the organizational level."

H_{11}: Relationalism in the principal–agent dyadic relationship is inversely related to contract enforcement.

Channel system and dyadic interaction. Principals can be expected to safeguard specialized investments and the systemwide capabilities that arise from them in most circumstances (Anderson 1985). Therefore, when significant specialized investments are at risk in a channel system, the principal's tendency to take a milder enforcement response when relationalism is high may be weakened. Although the spirit of cooperation inherent in exchanges with high relationalism still will be present (see Ben-Porath 1980; Treas 1993), the principal's imperative to maintain the value of its specific investments may reduce the level of tolerance it displays (see Heide and John 1992). The potential downside for the principal in harming the level of relationalism may be outweighed by the benefits to the principal in protecting its specialized investments. Any increase in transaction costs resulting from lowered cooperation may be more than offset by savings in transaction costs from safeguarding TSIs.

H_{12}. The greater the principal's TSIs in a channel system, the weaker is the inverse relationship between relationalism and contract enforcement.

Research Method

Research Context

Although we could have selected any channel context in which explicit contracts exist to perform our study, we chose to focus on franchising. Because important and elaborate contracts exist within franchise systems, we expect this setting to display a relatively high fit between the deployment and enforcement of contracts. If we find variation in enforcement severity here, such variation also may exist in other channel settings.

We selected six franchising industries (automobile, business-to-business, food, cleaning, personal care, and personnel recruitment services) for inclusion. Sampling multiple industries provides more variance on the study variables and promotes the generalizability of our results. Initially, we conducted a series of ten unstructured interviews, five with manufacturers and five with franchisors, with the objective of gaining general insight into contract enforcement. We then conducted 16 further in-depth interviews with franchisors to enhance the foundation of our study.

Contract Obligations and Violations

Among the five archetypal rules identified by Ellickson (1987, p. 77), we focus on the violation of substantive rules, those "that determine what conduct ... is to be punished, rewarded, or left alone." Within this class, we selected four areas of obligations commonly found in franchise contracts: (1) restriction on sources of products/services; (2) maintenance, appearance, and remodeling requirements; (3) payment of advertising/royalty contribution; and (4) compliance with standards/operating manuals. Prestudy interviews indicated that these obligations commonly were violated. In the survey, respondents were provided with these areas of obligations and asked to select one that had been violated by an agent in the past year. Respondents also had the opportunity to indicate a fifth category, "other," if the violation they recalled did not fit into any of the areas. The respondents were asked to focus on this obligation and the specific agent that violated it in responding to many of the items.

Data Collection

On the basis of a review of the literature and prestudy interviews, we developed a survey instrument. A panel of three academic experts was asked to evaluate the items, after which managers from six different franchisor organizations were asked to fill out the questionnaire in our presence and raise questions as problems or ambiguities arose. We then conducted a pretest on a random sample of 100 franchisors. We received 22 returned surveys and used them to improve several of the scales further.

We drew a national sample of top managers in franchisor organizations at random from the *Franchise Opportunities Handbook* published by the U.S. Department of Commerce (1995). We made telephone calls to firms in the sample to check mailing addresses and verify that the managers were directly involved in making enforcement decisions. After we excluded firms we could not contact and those that did not qualify (e.g., licensing firms, no longer franchising, no longer in business), our sampling frame consisted of 500 franchisors.

Letters were mailed to the identified representatives to prenotify them of the study and solicit their participation. A week later, the survey was mailed. Follow-up attempts consisted of two further rounds of telephone calls, interspersed with a reminder letter. Finally, another set of surveys was mailed by priority mail to those who had not yet responded. Our iterative data collection effort yielded 229 responses, of which 16 were incomplete or unusable. The effective response rate of 43% compares favorably with those obtained in prior channels research. Of the 213 usable responses, 160 were received in the first wave. Our respondents had considerable experience within the firm (mean = 9.1 years, standard deviation [S.D.] = 7.9), as well as in their positions (mean = 5.7 years, S.D. = 6.38). Table 1 provides additional details on the sample.

A multivariate analysis of variance contrasting first- and second-wave respondents on the focal constructs of our study indicated no significant differences. Furthermore, a

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[7] When relationalism is high, opportunistic agents could violate both relational norms and contractual obligations while relying on the principal to take relatively mild enforcement responses. However, if the principal detects such opportunism, the norms on which relationalism rests would be seriously damaged Therefore, the risks of such opportunism appear greater than the short-term benefits to agents

TABLE 1
Violations and Sample Characteristics

Nature of Violations	Violation Code	Frequency of Violation
Restriction on sources of products/services	1	25
Maintenance, appearance, and remodeling requirements	2	43
Payment of advertising/royalty contribution	3	58
Compliance with standards/operating manuals	4	67
Other	5	20

Industry	Questionnaires Sent	Questionnaires Received	Response Rate	Modal Violation[a]	Mean Number of Outlets	Mean Number of Employees
Automobile services	44	20	45.4%	4	106	1647
Business-to-business services	79	35	44.3%	3	120	98
Fast food and restaurants	252	97	38.5%	3	129	248
Cleaning services	40	19	47.5%	3	659	84
Personal care	39	23	58.9%	4	128	149
Personnel recruitment agencies	46	19	41.3%	2	197	407
Full sample	500	213	42.6%	4	178	344

[a] Refer to violation code above.

comparison of respondents versus nonrespondents on the year of establishment and number of outlets yielded no significant differences. Therefore, nonresponse bias does not appear to be a serious problem in our study.

Construct Measures

Whenever possible, we used measurement scales from previous research that we modified to our setting. If preexisting scales were not available, we developed measures on the basis of the conceptual definitions of the constructs and prestudy interviews. We first examined the intercorrelations among the items designed for each scale, removing items that exhibited low correlations. We then conducted principal components factor analyses to determine the scales' unidimensionality and discriminant validity and further refined the scales when necessary. Finally, we conducted confirmatory factor analyses on the scale items (Anderson and Gerbing 1988). Because of the number of constructs and our sample size, we conducted confirmatory factor analyses on groups of maximally similar constructs (see Moorman and Miner 1997). The results suggest a satisfactory fit across the four models tested: (1) the task variables and enforcement (χ^2 = 227.53, degrees of freedom [d.f.] = 74, $p < .001$, Tucker-Lewis index [TLI] = .91, comparative fit index [CFI] = .92, root mean square error of approximation [RMSEA] = .10); (2) the TCE-related constructs (χ^2 = 51.74, d.f. = 32, $p < .02$, TLI = .93, CFI = .95, RMSEA = .05); (3) the network variables (χ^2 = 151.4, d.f. = 43, $p < .001$, TLI = .89, CFI = .92, RMSEA = .10); and (4) relational norms, conceptualized as a second-order factor (χ^2 = 106.04, d.f. = 42, $p < .001$, TLI = .89, CFI = .92, RMSEA = .08). A series of chi-square difference tests on the respective factor correlations provides further evidence of discriminant validity, because the chi-square of the constrained model exceeds that of the unconstrained model in all cases (see Bagozzi 1988).[8]

In Table 2, we report the correlation matrix and descriptive statistics for the finalized measures, including alpha coefficients if appropriate. All alphas are greater than .70, with the exception of those for the measures of environmental volatility and flexibility.

For contract enforcement, the severity of the principal's disciplinary response to an agent's violation of a contractual obligation, we found no suitable existing measure. Seven items constitute its final scale, and alpha = .95. We used both Likert items and semantic differentials to reduce potential method bias. The survey included an alternative measure of enforcement; respondents were asked to list, from a menu of options, the actions they took in response to the specific violation (see the Appendix). The two measures are correlated at .56 ($p < .001$), thus offering some evidence of convergent validity.

The TCE constructs were measured at the channel system level. We relied on items in Anderson (1985) and John and Weitz (1988) in developing the scale for TSIs; the final four-item scale has an alpha of .77. The measure of environmental volatility was adapted from Achrol and Stern (1988); the final three-item scale has an alpha of .61.

We built on prior dependence measures developed by Gundlach and Cadotte (1994) and Kumar, Scheer, and Steenkamp (1995).[9] We used semantic differentials to measure franchisor dependence, whereas we measured franchisee dependence with a combination of semantic differential items and a single Likert item. Each of the final measures is composed of six items. They are considered formative or composite indicators (Bollen and Lennox 1991) because dependence is determined by two components that may not be that highly correlated, motivational investment in goals and

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[8] Iteratively constraining pairs of variables to r = 1.0 resulted in chi-squared values as follows: task variables (χ^2 = 460.55, 380.73, 378.41), TCE variables (χ^2 = 159.89, 152.95, 156.71), and network variables (χ^2 = 189.45).

[9] We also tested our framework with the multiplicative operationalization of interdependence used by Heide (1994) and Lusch and Brown (1996). The results and their interpretation are, for the most part, the same as for the additive operationalization. Our use of the additive operationalization enables us to decompose the effects of magnitude and asymmetry rather than consider them simultaneously, as is required by the multiplicative approach.

TABLE 2
Descriptive Statistics

	Number of Items	Mean	S.D.	ENF	TSIs	VOL	CRIT	DENS	CENTR	MAG	ASYM	REL	PA	COST	Mast Fr	SIZE	TSIs × VOL	CRIT × DENS	CRIT × CENTR
Enforcement (ENF)	7	27.38	11.88	.95															
TSIs	4	21.35	4.6	.23*	.77														
Volatility (VOL)	3	12.41	3.79	.00	.11	.61													
Obligation criticality (CRIT)	4	21.86	5.51	.49*	.13	–.03	.85												
Network density (DENS)	6	27.81	7.44	–.04	.25*	.14	.07	.91											
Network centrality (CENTR)	5	15.31	5.30	–.20*	.05	.05	–.06	.26*	.82										
Interdependence magnitude (MAG)	12	35.28	7.99	–.04	.18*	–.01	–.01	.05	.47*	—									
Interdependence asymmetry (ASYM)	12	4.55	7.63	.17	.16*	–.07	–.05	.05	–.34*	–.09	—								
Relational norms (REL)	11	53.28	11.22	–.32*	.14*	.10	–.18*	.12	.36	.38*	–.06	—							
Performance ambiguity (PA)	3	10.03	3.55	–.13	–.35*	.04	–.03	–.13*	–.02	–.05	–.10	–.19*	.73						
Cost of enforcement (COST)	3	10.85	4.38	–.02	.00	.03	.01	–.02	–.08	–.06	–.07	–.15*	.17*	.72					
Master franchisee (MastFr)	1	1.08	0.29	.00	–.05	.03	–.10	.16*	.19*	.09	.06	.06	.10	.02	—				
Log(Number of employees) (SIZE)	1	4.09	2.09	.21*	.16	–.02	.09	.01	–.09	–.08	.03	–.13	–.02	–.05	.02	—			
TSIs × VOL	—	.11	.97	–.13*	–.11	.13	–.18*	.00	.00	–.11	.06	.19*	–.07	–.17*	.09	.01	—		
CRIT × DENS	—	.06	.99	–.19*	–.05	.05	–.10	.17*	.00	–.03	.03	.11	.00	–.05	–.03	.00	.16*	—	
CRIT × CENTR	—	–.06	1.03	–.04	–.03	–.09	–.12	.00	.15*	–.02	–.01	.07	.00	.05	–.05	–.06	.04	.22*	—
TSIs × REL	—	.14	1.12	.17*	–.02	.17	.02	.06	.06	–.15*	–.07	–.04	.10	.00	.04	.10	.07	–.08	–.11

*r is significant at $p < .05$.

Notes: Figures on the diagonal represent α values, where appropriate.

replaceability. We measured interdependence magnitude as the sum of the dependence scores, whereas we measured asymmetry as the difference between dependence scores. (A positive value indicates a power advantage for the franchisor.)

We measured relationalism as a higher-order construct. We summed the scales of the three facets to arrive at an underlying syndrome of relationalism (see Lusch and Brown 1996; Noordeweir, John, and Nevin 1990). The underlying scales had alphas of .73, .66, and .78.

We found no suitable existing measures for the remaining three constructs. Obligation criticality is the importance attached by the principal to the contractual obligation violated by the agent. Its final measure is a four-item scale, with an alpha of .85. Network density reflects the average strength of relations in a network. The six-item scale is composed of three Likert items and three semantic differentials, with an alpha of .91. Network centrality is the strength of an agent's position in an agent network. The final five-item scale has an alpha of .82 and is composed of two Likert items and three semantic differentials.

Control Variables

The principal's ability to enforce could be compromised by inadequate information regarding agent performance and prohibitively high costs of enforcement. We therefore controlled for the performance ambiguity across the channel system and the cost of enforcement. Furthermore, prestudy interviews suggested that enforcement severity may vary by industry, as well as by firm size. Accordingly, we included a set of five dummy variables to represent the industry sectors of the sample with one holdout and a firm size measure based on the logarithm of the number of employees.[10] Furthermore, although our focus is the informal agent network, we also controlled for an element of the formal network: whether the focal agent was a master franchisee (i.e., owned and operated more than one franchised outlet). Refer to the Appendix for the specific multi-item measures of performance ambiguity and cost of enforcement.

Analysis

Model Specification

We regressed enforcement on the hypothesized explanatory variables, including the moderators and control variables. We standardized all variables to reduce multicollinearity between the multiplicative terms and their constituent variables (see Aiken and West 1991; Freidrich 1982). The results of the full model estimation are displayed in Table 3.

An incremental F-Test (Aiken and West 1991) was used to compare the full model with a main effects–only model.

TABLE 3
Estimation Results

Independent Variables	Parameter Estimates (|t-Value|)	Hypothesis	Supported?
Intercept	–.39 (1.81)		
TSIs	.13 (1.98)**	H_1	Yes
Volatility	.05 (.90)	H_2	No
TSIs × volatility	–.02 (.29)	H_3	No
Obligation criticality	.43 (7.73)***	H_4	Yes
Network density	–.08 (1.36)*	H_5	Yes
Network centrality	–.15 (2.01)**	H_6	Yes
Network density × obligation criticality	–.12 (1.98)**	H_7	Yes
Network centrality × obligation criticality	.12 (2.14)**	H_8	Yes
Interdependence magnitude	.14 (2.10)**	H_9	Yes
Interdependence asymmetry	.12 (1.95)*	H_{10}	Yes
Relationalism	–.25 (3.96)***	H_{11}	Yes
TSIs × relationalism	.18 (3.45)***	H_{12}	Yes
Control Variables			
Performance ambiguity	–.12 (2.07)**		
Cost of enforcement	–.05 (.99)		
Master franchisee	.35 (1.83)**		
Firm size	.10 (1.84)**		
D_1	.03 (.43)		
D_2	–.05 (.61)		
D_3	–.03 (.31)		
D_4	–.04 (.52)		
D_5	–.02 (.31)		
	Adjusted R^2 = .41		
	$F_{21,191}$ = 7.92		

*$p < .10$, one-tailed test.
**$p < .05$, one-tailed test.
***$p < .01$, one-tailed test.

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[10] We used the log of firm size because of high variation in the number of employees across the firms in our sample.

Inclusion of the moderator effects increases the variance explained by almost 15% compared with the base model, which indicates that the inclusion of the interactions is warranted ($F = 21.62$, $p < .001$). When a significant moderator effect is found, Aiken and West (1991) recommend assessing the relationship between the independent variable and the dependent variable for ±1 standard deviation of the moderator to help determine the exact nature of the effect. Such an analysis was performed in this study and is reported for each significant moderator effect. The tests conducted at different levels of the moderator variables indicate monotonic moderator effects (see Schoonhoven 1981). It should be noted that in the presence of significant moderator effects, the main effects are conditional in that they indicate their impact on enforcement at mean levels of the moderator variables (Aiken and West 1991).

Hypothesis Tests

We find significant support for H_1 ($b = .13$, $p < .05$). Principals are likely to take a relatively strict enforcement response when systemic TSIs are at risk.[11] However, we do not find support for H_2, which involves the main effect of volatility ($b = .05$), or for H_3, which focuses on the moderator effect of TSIs on the connection between volatility and contract enforcement ($b = -.02$). H_4 is strongly supported ($b = .43$, $p < .01$), indicating that when a critical obligation is violated, adverse consequences to the principal and its channel system are likely to be substantial and contract enforcement is likely to be severe.

Network density is inversely related to contract enforcement, in support of H_5, though marginally ($b = -.08$, $p < .10$). Furthermore, H_6, which involves the agent's network centrality and the severity of the principal's enforcement response, is supported ($b = -.15$, $p < .05$). The possibility of retaliation from a dense network and from a central agent and its supporters appears to dampen the principal's enthusiasm for a severe enforcement response to some degree, compared with the enforcement response in loosely connected networks and with low-status agents.

Network density significantly moderates the relationship between obligation criticality and contract enforcement ($b = -.12$, $p < .05$; $b_{\text{under low density}} = .55$, $p < .01$; $b_{\text{under high density}} = .31$, $p < .01$), so H_7 is supported. In dense networks, principals may temper their enforcement response to some degree when critical obligations are violated to avoid a possible negative backlash. Furthermore, consistent with H_8, we find that when network centrality is high, the positive relationship between obligation criticality and contract enforcement is heightened ($b = .12$, $p < .05$; $b_{\text{under low centrality}} = .30$, $p < .01$; $b_{\text{under high centrality}} = .54$, $p < .01$). By responding more strongly to a central agent's violation of a critical obligation, the principal is sending a signal of its commitment to maintain important standards and routines to other agents. Both network moderators in question are strength moderators, in that they change the extent to which criticality has a positive relationship with enforcement but not the nature or form of the relationship.

We find strong support for H_9, which posits a positive relationship between interdependence magnitude and the severity of the principal's enforcement response ($b = .14$, $p < .05$). A relatively severe enforcement response may be used in high-magnitude relationships to ensure that agent operations and the principal's goal attainment in such important exchanges are not put in jeopardy. H_{10}, involving interdependence asymmetry and enforcement, is supported, albeit marginally ($b = .12$, $p < .10$). Principals with a power advantage in their channel relationships may be in a position to make a severe response work effectively.

Strong support is offered for H_{11}, which involves relationalism and enforcement severity ($b = -.25$, $p < .01$). However, this relationship is significantly altered by the presence of high TSIs ($b = .18$, $p < .01$). Analyzing the impact of relationalism on enforcement, we find $b_{\text{under low TSI}} = -.43$, $p < .01$, whereas $b_{\text{under high TSI}} = -.08$, $p > .10$. The nonsignificant t-value of b in the latter case suggests that the tolerance displayed in conditions of relationalism disappears when high levels of TSIs exist. Although these results are consistent with H_{12}, they suggest a stronger moderating influence of TSIs than hypothesized.

Performance ambiguity has a significant tempering effect on enforcement ($b = -.12$, $p < .05$). Furthermore, we find a significant, positive relationship between firm size and enforcement ($b = .10$, $p < .05$) and between the focal agent being a master franchisee and enforcement ($b = .35$, $p < .05$). Cost of enforcement and industry type appear to have no influence. Of the total variance explained (.37), the control variables together account for .03.

Post Hoc Analyses

We also analyzed whether enforcement severity varied by the type of violated obligation. Because the frequency distribution across the obligation areas is quite dispersed (see Table 1), we did not have enough degrees of freedom to estimate the full regression model. Instead, we conducted a series of Chow tests at the subsample level, iteratively dichotomizing the sample by the type of obligation violated (e.g., Violation 1 compared with the rest; see Table 1). We used the original regression model in each case, excluding the control variables. The F-value in each case was nonsignificant, indicating that the coefficients are stable across the type of violated obligation.

Discussion

Research Implications

The need for behavioral channels research to expand beyond its traditional focus on the dyadic relationship has been recognized for quite some time (see Anderson, Håkansson, and Johanson 1994; Heide 1994). The results of our study underscore the importance of such a broadening. We show that the severity of the principal's enforcement response is influenced significantly by constructs that operate at the channel system, network, and dyadic levels of analysis. Ignoring constructs at any of these three levels would lead to an incomplete and poorly specified conceptual framework. In addition, we find that significant moderator effects exist when the levels of analysis overlap with one another.

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[11] We also had a measure of the principal's TSIs in the relationship with the focal agent (see the Appendix). When we substitute this measure for the measure of TSIs at the systemic level, the results remain basically the same. When we include both TSI measures in the regression, only the systemic TSI measure is significant, which lends support to our contention that TSIs at the channel system level have the more critical impact on enforcement decisions.

Our study also integrates three theoretical perspectives—TCE, the relational exchange paradigm, and network theory—in an attempt to build a sound conceptual foundation for the research hypotheses. Specifically, we complement TCE's emphasis on transaction cost minimization with benefit-based arguments consistent with the relational exchange approach. In a similar manner, we also incorporate transaction cost issues within the cost- and benefit-based analysis of relational exchange and network theory.

At the channel system level, the principal appears primarily concerned about maintaining the integrity of its channel policies, enhancing system performance, and minimizing systemic transaction costs. Relatively severe enforcement responses are likely to result when contract violations occur in channel systems with high levels of the principal's systemic TSIs. Such an enforcement response is likely undertaken to protect the systemic TSIs and agent capabilities arising from them. Moreover, principals are likely to react rather severely to the violation of critical obligations. Allowing critical obligations to be violated without a severe response is likely to undermine the integrity of channel policies and system-level performance.

We find no evidence of the impact of environmental volatility on enforcement. It is possible that extreme levels of volatility may outstrip the principal's ability to enforce incomplete contracts or that volatility may have its primary effect on the occurrence of violations rather than on the enforcement responses that transpire thereafter. Another possible explanation is that volatility in the focal agent's trading area may have more impact on enforcement than volatility at the channel system level. Whatever the case, the nature of the relation between environmental volatility and enforcement requires further exploration.

Our study provides empirical evidence that network characteristics matter in channel relationships, both directly and in combination with other constructs. The principal's judgments about how agents in informal networks will react to enforcement actions and how these reactions will affect system performance, including transaction costs, appear to influence the nature of the principal's enforcement response. The principal's fear of retaliation seems to explain the tempering of enforcement severity when the principal faces a densely connected network of agents or a highly central agent. This also may explain why high network density appears to weaken the positive connection between obligation criticality and contract enforcement. However, fear of retaliation appears to be outweighed by positive signaling effects when a central agent violates a critical obligation. In such cases, the principal may seize the opportunity to make an example of such a prominent agent, sending the message that the obligation is so critical to system success that even a highly influential agent will face a severe enforcement response. Although a central agent and the subset of agents affiliated with it could react negatively to such an approach, the potential benefits of signaling the principal's resolve to others in the network appear to outweigh such risks.

In providing evidence of differential moderator effects on obligation criticality across network density and centrality, this study aids the understanding of the subtleties of network effects in channel relationships. Network characteristics are likely to influence most aspects of the interfirm coordination process and deserve heightened attention in further channels research.

At the dyadic level, the principal's enforcement response appears to be shaped by its need to protect the strength and value of the exchange relationship and its ability to take a severe enforcement approach. When interdependence magnitude is high, contract violations are likely to be met with a relatively severe enforcement response. By judiciously reacting to the violation of a previously agreed-on contractual obligation, the principal may be cementing the integrity and long-term stability of an important exchange relationship. In such cases, the focal agent appears unlikely to retaliate because its violation of an obligation is what necessitated the enforcement response. In terms of interdependence asymmetry, the principal's ability to take a severe enforcement response seems enhanced when it enjoys a power advantage in the exchange. Note that our sample reports only moderate levels of interdependence magnitude and asymmetry. Additional research is required to determine if our interdependence results are generalizable to channel settings with greater levels of magnitude and asymmetry.

When relationalism is high, interfirm interactions should be more cooperative in nature (Dwyer, Schurr, and Oh 1987). Accordingly, channel members are likely to take less severe enforcement responses to avoid ruining the underlying foundation of such exchanges. However, we find that the tempering effect of relationalism on contract enforcement vanishes in the presence of significant TSIs. Although protecting relational norms in a single dyadic relationship may have economic benefits in terms of more cooperative interaction, the need to safeguard systemic TSIs appears to take precedence, at least when the contract enforcement decision is the focus.

Managerial Implications

Three managerial implications of our study appear to be most critical. First, practitioners can use our study and its results as a check on the adequacy of their existing enforcement models. The entire set of significant channel system-, network-, and dyadic-level constructs in our study should be weighed in making the enforcement decision. Furthermore, the trade-offs inherent in making a more or less severe enforcement response based on frequently conflicting channel system-, network-, and dyadic-level constructs need explicit attention. The mere process of examining and evaluating our results may lead to better enforcement decisions, especially for managers and firms with relatively little experience in making such decisions.

Second, practitioners are advised to consider the objectives underlying their enforcement responses and their relative priority. Objectives could include maintaining the integrity of channel policies, enhancing system performance, minimizing transaction costs, avoiding retaliation, signaling resolve, or protecting the strength and value of an important exchange relationship. For a particular violation, understanding each objective and its relative priority could help in making the inherent trade-offs among the channel system-, network-, and dyadic-level constructs. It may make sense for channel members to establish policy guidelines regarding how they will tend to react to certain contract violations, thereby establishing a priority sequence among the objectives underlying enforcement decisions.

Third, it is important for practitioners to have accurate perceptions of the informal networks among agents and the agents' likely reaction to enforcement actions. Without this, any evaluation of the costs and benefits of alternative enforcement responses based on network density and centrality will be error ridden. More specifically, if practitioners either under- or overestimate the potential negative backlash by associated agents, their enforcement responses will be misguided. Firms can use the network measures developed in our study to grasp the nature of informal agent networks better. They then can track responses of informal networks to enforcement responses over time, perhaps supplementing them with information gathering from certain agents or groups (e.g., agent advisory boards), to grasp likely reactions to enforcement responses.

Limitations

Although our results appear useful, three main limitations of the study must be considered. First, the generalizability of our results is in question. Although we gathered data from six different types of franchise systems, whether our findings hold in other franchise settings and channel contexts other than franchising must be explored. For example, although we found environmental volatility to have no bearing on the level of contract enforcement in our study, it remains to be seen whether this finding is robust across different channel contexts.

Second, we relied on data from a single member of the dyad, the franchisor. Although data collection with the upstream channel member is fairly uncommon, obtaining corresponding viewpoints from downstream agents would have made our study stronger. Additional research based on data collected from both sides of the dyad would yield insight into areas of divergence.

Third, specification error could be a problem, even given the strong explanatory power of our model. Because our study is an early attempt to build and test a conceptual framework of contract enforcement, important factors may have been omitted. Attributed opportunism, the frequency of the particular violation across the system, and the principal's response to past occurrences all could have a significant bearing on current enforcement practices. Extended conceptual frameworks should be developed and examined empirically in the future.

Future Research Directions

In addition to the research needs discussed, a variety of others exist. We focused on the severity of the enforcement response in our study, but contract enforcement is a matter of both degree and kind. Therefore, more specific attention to the exact type or types of enforcement actions being used, such as cure letters and cease-and-desist warnings, is needed. Additional studies of the nuances of enforcement are warranted.

We also focused on contractual violations by agents. An additional issue worth considering is the possibility of contractual violations by principals. An implicit assumption is often made that the principal's concern for its own reputation will preclude, or at least minimize, the possibility of opportunistic behavior (Klein 1996). This assumption is unlikely to hold in many situations.

Additional research is needed to explore network effects more deeply. Specifically, a greater understanding of the motives attributed by the agent network to the principal's actions could prove beneficial. For example, in channel systems in which strong common goals exist between the principal and agents (e.g., enhanced brand equity), a severe enforcement response by the principal may not be viewed by densely connected agents as unfair but rather as a necessary and justifiable action to safeguard system interests. Self-policing efforts by agents also would be interesting to explore in such a line of research. Moreover, although we controlled for one type of formal network (i.e., master franchisees), the impact of other types of formal networks (e.g., industry trade associations) should be examined in the future.

Finally, the deployment and enforcement of contracts are separable issues but likely are interrelated. That is, the exact nature of the explicit contract, including aspects of the governance structure (e.g., formalization, exclusive territories, exclusive dealing), is likely to have a bearing on both the frequency of contract violations by agents and the severity of the enforcement responses by principals. Research examining such interconnections could make important contributions to channels research.

APPENDIX
Construct Measures

All items are measured on seven-point "strongly agree" to "strongly disagree" Likert scales unless otherwise mentioned.

Contract Enforcement: ENF (7 Items, $\alpha = .95$)[a]

1. We took tough measures when this particular clause was violated.
2. Our response to this violation was firm.
3. We took strict disciplinary action against this franchisee.
4. Stern punitive action was taken against this franchisee.
5. Lenient–Uncompromising.
6. No sanctions imposed–Highest levels of sanctions imposed.
7. Minimal action–Severe action.

The alternative measure asked the respondents to check which enforcement action (or actions) was taken with the agent: informal attempts to persuade, telephone call, site visit, cure letter, cease-and-desist warning, or termination proceedings. The actions were in increasing order of severity. We took the most severe response checked as the value for this measure.

TSIs at the Channel System Level (4 Items, $\alpha = .77$)

1. Our franchise has invested heavily in personnel dedicated to our franchisees.
2. Our franchise has made significant investments in displays, training, etc. dedicated to our franchise relationships.
3. We have developed very specialized procedures and systems for our franchisees to follow.
4. Training and qualifying our franchisees has involved considerable commitment of time and money.

APPENDIX
Continued

TSIs at the Dyadic Relationship Level (4 Items, α =.76)

1. If this relationship were to terminate, it would be difficult for us to recoup investments made in this franchisee.
2. Training and qualifying this franchisee has involved considerable commitments of time and money.
3. We have invested a great deal in building up this franchisee's business.
4. If we were to terminate this franchisee, we would lose a lot of our investment in him/her.

Environmental Volatility: VOL (3 Items, α = .61)

1. In our business, customer tastes change rapidly.
2. Production/service technology changes are few and far between in our business. (R)
3. New developments evolve very rapidly in our industry.

Relationalism: REL (11-item summation of 3 facets)

Solidarity (3 items, α = .73)

1. Problems that arise in the course of this relationship are treated by the parties as joint rather than individual responsibilities.
2. The parties are committed to improvements that may benefit the relationship as a whole and not only the individual parties.
3. The responsibility for making sure that the relationship works for both of us is shared jointly.

Flexibility (4 items, α = .66)

4. Flexibility in response to requests for changes is a characteristic of this relationship.
5. We expect to make adjustments in the ongoing relationship to cope with changing circumstances.
6. When some unexpected situation arises, we would rather work out a new deal together than hold each other to the original terms.
7. Changes in terms are not ruled out by the parties if considered necessary.

Information Exchange (4 items, α = .78)

8. In this relationship, it is expected that any information that might help the other party will be provided to them.
9. Exchange of information in this relationship takes place frequently and informally.
10. It is expected that the parties will provide proprietary information if it can help the other party.
11. It is expected that we keep each other informed about events or changes that may affect the other party.

Interdependence Structure: Magnitude and Asymmetry (formative scales)

Franchisor Dependence on Franchisee (semantic differentials)

1. Easy to replace this franchisee–Very difficult to replace this franchisee.
2. Does not account for a high percentage of our sales in that market–Accounts for a high percentage of our sales in that market.
3. Does not account for a high percentage of our profits in that market–Accounts for a high percentage of our profits in that market.
4. We are not dependent on him/her–We are very dependent on him/her.
5. There are plenty of alternatives to him/her–We do not have a good alternative to him/her.
6. We do not need to maintain this relationship–We need to maintain this relationship.

Franchisee Dependence on Franchisor[a]

1. Easy to replace us–Very difficult to replace us.
2. S/he is not dependent on us–S/he is very dependent on us.
3. There are plenty of alternatives to us–S/he does not have a good alternative to us.
4. S/he does not need to maintain this relationship–S/he needs to maintain this relationship.
5. We are not important to this franchisee–We are important to this franchisee.
6. If this franchisee were to stop representing us, s/he would suffer a significant loss in income.

Obligation Criticality: CRIT (4 Items, α = .85)

1. Compliance with this clause is vital to the very survival of our franchise.
2. The performance of this function is crucial to our organizational objectives.
3. Failure to perform this function has serious consequences for our franchise.
4. Inadequate performance of this task will not affect us too seriously. (R)

Network Density: DENS (6 Items, α = .91)[a]

1. Franchisees of our system share close ties amongst themselves.
2. There is very little interaction among our franchisees. (R)
3. Relations among our franchisees are very close.
4. Share frequent communications–Rarely communicate with each other.
5. Frequently discuss common problems–Rarely discuss common problems.
6. Extremely close ties–Not very cohesive.

Network Centrality: CENTR (5 Items, α = .81)[a]

1. This franchisee is a crucial cog in the franchisee network.
2. This franchisee maintains few relations with other franchisees. (R)
3. Not at all active in franchise network–Very active in franchise network.
4. Has few links with other franchisees–Has extensive links with other franchisees.
5. Not at all central to our system–Very central to our franchise system.

Performance Ambiguity: PA (semantic differentials; 3 Items, α = .73; a seven-point semantic differential scale was used)

1. Not possible to supervise closely–Easy to supervise closely.
2. Difficult to evaluate level of franchisee effort–Easy to evaluate level of franchisee effort.
3. Our evaluation is based on very "fuzzy" information–Our evaluation is based on very accurate information.

Cost of Enforcement: COST (semantic differentials; 3 Items, α = .7)

1. Very difficult to enforce this clause–Easy to enforce this clause.
2. Very expensive to enforce–Not at all expensive to enforce.
3. Action would require a lot of time–Action would not consume much time.

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[a] Construct was measured using a combination of Likert scale items and semantic differentials.

Notes: (R) indicates a reverse-scored item.

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Logistics Service Quality as a Segment-Customized Process

Logistics excellence has become a powerful source of competitive differentiation within diverse marketing offerings of world-class firms. Although researchers have suggested that logistics competencies complement marketing efforts, empirical evidence is lacking on what logistics service quality means to customers and whether it has different meanings for separate customer segments. The authors present empirical support for nine related logistics service quality constructs; demonstrate their unidimensionality, validity, and reliability across four customer segments of a large logistics organization; and provide empirical support for a logistics service quality process. Although structural equation modeling offers support for the logistics service quality process across customer segments, the authors find that the relative parameter estimates differ for each segment, which suggests that firms ought to customize their logistics services by customer segments.

Both corporations and researchers are becoming increasingly aware of the strategic role of logistics services in a firm's overall success (Bienstock, Mentzer, and Bird 1997; Bowersox, Mentzer, and Speh 1995; Brensinger and Lambert 1990; Mentzer, Gomes, and Krapfel 1989). Anecdotal evidence from firms such as Dell Computer Corporation, Nabisco, and Federal Express suggest that logistics excellence has a significant impact on revenue and profitability (Mentzer and Williams 2001). Digging deeper, one finds a multibillion-dollar third-party logistics industry dedicated to improving manufacturers' logistics services. Businesses have moved beyond viewing logistics as merely an area for cost improvements to viewing logistics as a key source of competitive advantage within a firm's total market efforts (Novack, Rinehart, and Langley 1994). For example, customer service has been a key focal area of research in the logistics discipline for several years. Stemming from this stream of research, logistics service capabilities can be leveraged to create customer and supplier value through service performance (Novack, Rinehart, and Langley 1994); increase market share (Daugherty, Stank, and Ellinger 1998); enable mass customization (Gooley 1998); create effective customer response-based systems (Closs et al. 1998); positively affect customer satisfaction and, in turn, corporate performance (Dresner and Xu 1995); provide a differentiating competitive advantage (Bowersox, Mentzer, and Speh 1995; Kyj and Kyj 1994; Mentzer and Williams 2001); and segment customers (Gilmour et al. 1994).

The last area, customer segmentation, offers powerful possibilities. If customer segments indeed vary in their logistics desires, it should be possible to customize logistics programs to different customer segments, which would improve both effectiveness and efficiency. If, in contrast, customers view logistics services similarly across segments, and if that view consistently affects outcomes such as customer satisfaction in the same way across segments, suppliers should be able to create logistics services that appear identical across customer segments, enabling them to leverage economies of scale. Therefore, an important research question is, Do different customer segments value different aspects and levels of logistics service quality (LSQ)? Some research suggests that logistics services ought to be customized by market segments (Gilmour et al. 1994; Michigan State University 1995, 1999; Murphy and Daley 1994). However, the research is not yet conclusive, partially because of the conceptualization and operationalization of logistics services. More research is needed to determine if logistics services should be customized by market segment.

Before this research question can be answered, researchers need to know more about what components constitute the overall concept of LSQ from the perspective of the customer. It is essential first to know what LSQ means to customers if researchers expect to examine whether groups of customers place varying degrees of emphasis on specific aspects of this meaning. The purpose of this article is to describe a study in which we examine both of these issues. This study shows that (1) LSQ might best be conceptualized as a process of nine interrelated quality constructs, (2) these nine distinct constructs are reliable and valid across customer segments, and (3) the emphasis placed on each of the constructs differs across some customer segments, which suggests that suppliers should customize their logistics services to the desires of individual customer segments. In subsequent sections, we discuss the importance of resolving the research question, the gap in the general service quality literature in addressing LSQ, theoretical development and hypotheses, the methods used, analyses and results, and the implications of the study.

LSQ

Logistics excellence has been recognized as an area in which firms can create competitive advantage (Bowersox, Mentzer, and Speh 1995; Kyj and Kyj 1994; Mentzer and

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Williams 2001; Morash, Droge, and Vickery 1996), in part because of its visible service impact on customers (Bienstock, Mentzer, and Bird 1997; Pisharodi and Langley 1990; Sharma, Grewal, and Levy 1995). To successfully leverage logistics excellence as a competitive advantage to customers, logisticians must coordinate with marketing departments (Kahn 1996; Kahn and Mentzer 1996; Mentzer and Williams 2001; Murphy and Poist 1996; Williams et al. 1997). The quality of logistics service performance is a key marketing component that helps create customer satisfaction (Bienstock, Mentzer, and Bird 1997; Mentzer, Gomes, and Krapfel 1989) and has been recognized as such for some time (Perrault and Russ 1974).

There are many definitions and descriptions of how logistics creates customer satisfaction. The most traditional are based on the creation of time and place utility (Perreault and Russ 1974). The so-called seven Rs describe the attributes of the company's product/service offering that lead to utility creation through logistics service; that is, part of a product's marketing offering is the company's ability to deliver the right amount of the right product at the right place at the right time in the right condition at the right price with the right information (Coyle, Bardi, and Langley 1992; Shapiro and Heskett 1985; Stock and Lambert 1987). This conceptualization implies that part of the value of a product is created by logistics service.

As the business environment has changed, the operations-based definitions of logistics service have evolved. As such, the idea of value has been broadened to include several value-added operational logistics tasks, such as packaging, third-party inventory management, bar coding, and information systems (Ackerman 1989; Mentzer 1993; Mentzer and Firman 1994; Witt 1991). The value-added concept expanded the traditional time and place utilities to include form utility (Ackerman 1991) but was still an operations-based concept. LaLonde and Zinszer (1976) describe customer service as possessing three components: (1) an activity to satisfy customers' needs, (2) performance measures to ensure customer satisfaction, and (3) a philosophy of firmwide commitment. However, these components all focus on the provider firm, not on the customer. Similarly, other research has developed a framework for quantifying the value created by logistics operations that is heavily focused on the service provider (Novack, Langley, and Rinehart 1995). Although this research incorporates internal and external customers, it predominantly involves provider firms—that is, how logistics executives can quantify the value they create for customers. A process is needed to measure customers' perceptions of the value created for them by logistics services, because it is the customers' perspective of service quality that determines their satisfaction level.

Mentzer, Gomes, and Krapfel (1989) argue that two elements exist in service delivery: marketing customer service and physical distribution service (PDS). They recognize the complementary nature of the two elements to satisfy the customer and propose an integrative framework of customer service. This view is shared by others (Rinehart, Cooper, and Wagenheim 1989) and is regarded as an intellectual base for integrating marketing and logistics activities. Here, PDS is composed of three crucial components: availability, timeliness, and quality. We view PDS as a component of LSQ.

An approach to investigate LSQ further is to build on the service quality literature prevalent in marketing. The service quality approach, in general, is an attempt to understand customer satisfaction from the perspective of the differences between customer perceptions and actual customer service on various attributes (Parasuraman, Zeithaml, and Berry 1985). Researchers have begun to examine whether the service quality model can be used to measure logistics service (Brensinger and Lambert 1990). They have modified the original service quality model by developing logistics attributes that fit into the previously customer-defined dimensions and identifying additional gaps that could be applied to the logistics service context (Lambert, Stock, and Sterling 1990). These views of logistics service provide the building blocks to create a customer-based foundation for better definitions and measures of LSQ.

The use of customer-based definitions of LSQ brings physical distribution research, which traditionally has focused on physically observable operational attributes, more in line with marketing, which has devoted attention to understanding such unobservables as customers' perceived value. By recognizing, tapping into, and measuring customer perceptions of LSQ, logistics practitioners and researchers can add to the traditionally measured set of operational service attributes.

Service Quality

Many researchers have tried to replicate empirically the five-dimensional structure (tangibles, responsiveness, empathy, reliability, and assurance) of Parasuraman, Zeithaml, and Berry's (1985) original service quality instrument, SERVQUAL. In developing SERVQUAL, Parasuraman, Zeithaml, and Berry followed a general procedure of qualitative research (interviews and focus groups) to develop the initial scale and then performed quantitative surveys to refine and empirically test the scale. These interviews and surveys included retail consumers of appliance repair or maintenance, retail banking, long-distance telephone service, securities brokers, and credit card services. Additional research has expanded the use of SERVQUAL to include retail consumers of health care, residential utilities, job placement, pest control, dry cleaning, financial services, and fast-food services, and the resultant dimensions have ranged from one to eight (e.g., Babakus and Boller 1992; Babakus and Inhofe 1993; Babakus and Mangold 1992; Babakus, Pedrick, and Inhofe 1993; Brown, Churchill, and Peter 1993; Carmen 1990; Cronin and Taylor 1992; Finn and Lamb 1990; Mishra, Singh, and Wood 1991; Parasuraman, Zeithaml, and Berry 1985, 1988, 1991, 1993, 1994; Spreng and Singh 1993).

Several researchers have argued for the addition of items and/or dimensions to SERVQUAL. For example, from a less sociological and more operational perspective, Crosby (1979) defines quality as conformance to requirements and argues that those requirements should be specifically defined to measure quality. From Crosby's (1979) view and the general total quality management perspective, certain aspects of quality (of services or otherwise) intuitively ought to be incorporated. Along these lines, in applying SERVQUAL to measure perceived quality of retail financial services, Brown, Churchill, and Peter (1993, p. 138) note the "omission of items we *a priori* thought would be critical to subjects' evaluation of ... quality." Similarly, Brensinger and Lambert (1990, p. 289), applying SERVQUAL to industrial purchasing of motor carrier transportation services, developed a four-factor structure and recommended that further research should supplement SERVQUAL items with "service specific variables" to increase the validity of service quality measurement in an industrial service context.

Bienstock, Mentzer, and Bird (1997) took note of these shortcomings in applying the concept of service quality to an industrial marketing context and suggest a classification scheme based on the work of Lovelock (1983), Grönroos (1984), and Parasuraman, Zeithaml, and Berry (1985). Within this classification scheme, the consumer applications of SERVQUAL are in the context of people receiving intangible actions (services) that are not physically separated from the consumer. Bienstock, Mentzer, and Bird (1997, p. 34) argue that business-to-business logistics services are offered in a context in which people are replaced with "things" and the customer and provider are physically separated. They maintain that the former is appropriate for the SERVQUAL "functional or process dimensions" (p. 33), but the latter logistics service context is composed more of "technical or outcome dimensions" (p. 34). They conclude that an "alternative conceptualization" is necessary for LSQ. As do Parasuraman, Zeithaml, and Berry (1985), Bienstock, Mentzer, and Bird (1997) follow a methodology of a qualitative phase to develop the scale and then perform a quantitative survey to refine and test it. They conceptualize physical distribution service quality (PDSQ) as a second-order construct composed of three first-order dimensions: timeliness, availability, and condition.

We view PDSQ as a component of the broader concept of LSQ. Timeliness, availability, and order condition are critical aspects of the customer's perception of LSQ. However, there are other components as well. In line with traditional service quality research in marketing, logistics services involve people who often take orders and deliver products and procedures for placing orders and handling discrepancies. On the basis of the service quality literature, interactions customers have with these people and procedures should affect their perceptions of overall logistics services.

In conceptualizing PDS, Mentzer, Gomes, and Krapfel (1989) synthesize 26 elements of physical distribution and customer service reported in the logistics literature over more than two decades to arrive at a parsimonious three-dimensional construct composed of availability, timeliness, and quality. This structure was supported by later empirical evidence, with slight reconceptualizations based on additional extensive qualitative research (Bienstock, Mentzer, and Bird 1997). Although the contribution of these studies lies in their parsimonious operationalization of critical aspects of service quality, other aspects that are traditionally mentioned in the literature should be part of a broader concept of LSQ. Specifically, order processing (Byrne and Markham 1991; Langley and Holcomb 1991); quality of contact personnel (Innis and LaLonde 1994); information at order placement (Byrne and Markham 1991; Innis and LaLonde 1994); order accuracy (Byrne and Markham 1991); order completeness, including accuracy, condition, and quality (Byrne and Markham 1991; Sterling and Lambert 1987); and the procedures for handling damaged, inaccurate, or return shipments (i.e., aside from the product condition itself) (Innis and LaLonde 1994; Sterling and Lambert 1987) ought to be incorporated. In short, we found several aspects of customer service that should be combined with PDSQ to conceptualize LSQ. Together with findings of significant situational limitations to the SERVQUAL approach both inside and outside logistics contexts (e.g., Van Dyke, Prybutok, and Kappelman 1999), we thought it best to engage in new qualitative research to complement the aforementioned literature and develop a more comprehensive conceptualization of LSQ.

Following the precedent of the literature, we conducted qualitative research to develop constructs and item pools related to LSQ. For this qualitative exploration, 15 managers within the Defense Logistics Agency (DLA) and 12 DLA customers were interviewed one-on-one to develop preliminary concepts. For this study, DLA was appropriate because its markets are large and diverse and the customers addressed in this study have a choice as to whether they use DLA as a logistics service provider. Following initial depth interviews, 13 focus group sessions were held with key buyers of logistics services for organizations in each DLA customer segment. Each focus group session lasted approximately two hours and was videotaped. Videotapes were combined with extensive notes for content analyses. These focus group sessions addressed the nature of the participant's work with DLA, evaluations of their relationship with DLA, and assessments of critical areas of importance for working with DLA. The qualitative research facilitated the development of a survey designed to measure LSQ. Specifically, the qualitative research revealed that participants representing multiple DLA customer segments were concerned about nine concepts:

- Personnel contact quality,
- Order release quantities,
- Information quality,
- Ordering procedures,
- Order accuracy,
- Order condition,
- Order quality,
- Order discrepancy handling, and
- Timeliness.

Personnel contact quality refers to the customer orientation of the supplier's logistics contact people. Specifically, customers care about whether customer service personnel are knowledgeable, empathize with their situation, and help them resolve their problems (Bitner 1990; Bitner, Booms, and Mohr 1994; Bitner, Booms, and Tetreault 1990; DeCarlo and Leigh 1996; Grönroos 1982; Hartline and Ferrell 1996; Parasuraman, Zeithaml, and Berry 1985). Parasuraman, Zeithaml, and Berry (1985) argue that in most service encounters, quality perceptions are formed during the service delivery. Similarly, Surprenant and Solomon (1987) suggest that service quality perceptions are tied more to the service process, which involves personnel contact, than to the resulting service outcome. As such, personnel contact quality is an important aspect of the employee–customer interface (Hartline and Ferrell 1996; Hartline, Maxham, and McKee 2000).

Order release quantities are related to the concept of product availability. On the basis of several criteria, DLA can release certain order sizes. The organization can challenge customers' requests to ascertain the need behind their volume requests. Customers should be the most satisfied when they are able to obtain the quantities they desire. The importance of product availability has long been realized as a key component of logistics excellence (Mentzer, Gomes, and Krapfel 1989; Novack, Rinehart, and Langley 1994; Perreault and Russ 1974). Although stockouts are believed to have significant impact on customer satisfaction and loyalty, it is difficult to quantify the financial impact of these lost sales (Keebler et al. 1999).

Information quality refers to customers' perceptions of the information provided by the supplier regarding products from which customers may choose (Mentzer, Flint, and Kent 1999; Mentzer, Rutner, and Matsuno 1997; Novack, Rinehart, and Langley 1994; Rinehart, Cooper, and Wagenheim 1989). This information is contained in DLA's catalogs. If the information is available and of adequate quality, customers should be able to use the information to make decisions.

Ordering procedures refer to the efficiency and effectiveness of the procedures followed by the supplier (Bienstock, Mentzer, and Bird 1997; Mentzer, Flint, and Kent 1999; Mentzer, Gomes, and Krapfel 1989; Mentzer, Rutner, and Matsuno 1997; Rinehart, Cooper, and Wagenheim 1989). In particular, focus group participants indicated that it was important for DLA's order placement procedures to be both effective and easy to use.

Order accuracy refers to how closely shipments match customers' orders upon arrival (Bienstock, Mentzer, and Bird 1997; Mentzer, Flint, and Kent 1999; Mentzer, Gomes, and Krapfel 1989; Mentzer, Rutner, and Matsuno 1997; Novack, Rinehart, and Langley 1994; Rinehart, Cooper, and Wagenheim 1989). This includes having the right items in the order, the correct number of items, and no substitutions for items ordered.

Order condition refers to the lack of damage to orders (Bienstock, Mentzer, and Bird 1997; Mentzer, Flint, and Kent 1999; Mentzer, Gomes, and Krapfel 1989; Mentzer, Rutner, and Matsuno 1997; Rinehart, Cooper, and Wagenheim 1989). If products are damaged, customers cannot use them and must engage in correction procedures with DLA and/or other vendors, depending on the source of the damage.

Order quality refers to how well products work (Novack, Rinehart, and Langley 1994). This includes how well they conform to product specifications and customers' needs. Whereas order accuracy addresses the complete set of products in the order (i.e., the accuracy of the kinds and quantities of the products in the order) and order condition addresses damage levels of those items due to handling, order quality addresses manufacturing of products. The focus group participants attributed a portion of their perceptions of the quality of DLA's logistics services to the quality of the products being delivered. Because DLA serves as a general purchasing organization for its customers, this attribution was not surprising.

Order discrepancy handling refers to how well DLA addresses any discrepancies in orders after the orders arrive (Novack, Rinehart, and Langley 1994; Rinehart, Cooper, and Wagenheim 1989). If customers receive orders that are not accurate, in poor condition, or of poor quality, they seek corrections from DLA. How well DLA handles these issues contributes to customers' perceptions of the quality of their services.

Timeliness refers to whether orders arrive at the customer location when promised. More broadly, timeliness also refers to the length of time between order placement and receipt (Hult 1998; Hult et al. 2000). This delivery time can be affected by transportation time, as well as back-order time when products are unavailable (Bienstock, Mentzer, and Bird 1997; Mentzer, Flint, and Kent 1999, Mentzer, Gomes, and Krapfel 1989; Mentzer, Rutner, and Matsuno 1997; Novack, Rinehart, and Langley 1994; Rinehart, Cooper, and Wagenheim 1989).

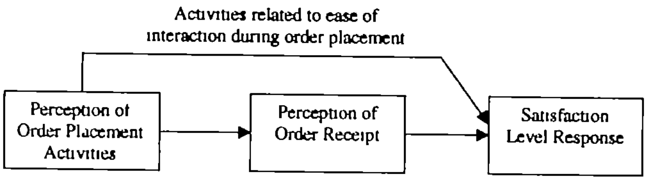
As is evident, these nine dimensions capture previously supported aspects of PDSQ—namely, availability (in terms of order release quantities), timeliness, and condition—but also capture other aspects of logistics services covered in the literature and discussed previously (e.g., personnel quality, information quality, discrepancy handling). In addition, order completeness is conceptualized as three distinct components—that is, order accuracy, order condition, and order quality—because qualitative research suggests that they differ yet are all considered when customers evaluate whether received orders are complete.

These nine dimensions of LSQ have been proposed as first-order dimensions of a second-order LSQ construct (Mentzer, Flint, and Kent 1999). However, this operationalization has two limitations. First, in a second-order construct, all dimensions are given equal weight and treated as if they occur simultaneously. This is a consistent limitation in the logistics literature. Researchers often provide a laundry list of activities and/or components of logistics services of which customers form perceptions. These operationalizations ignore the processes, that is, the temporal ordering of the components/dimensions being tested. Some components are not just correlated with but dependent on other components. Thus, the process by which perceptions of logistics service components affect one another, and eventually satisfaction, is lost. This omission is surprising considering the general attention given to logistics operations as a set of processes within supply chain management that are aimed at increasing customer satisfaction and reducing costs (e.g., Beinstock, Mentzer, and Bird 1997; Handfield and Nichols 1999; Michigan State University 1995, 1999; Persson 1995). The study of total quality management has long focused on processes, and quality initiatives continue to emphasize operations (e g., Li and Rajagopalan 1999). Moreover, organizational science researchers have modified their scientific inquiry approach away from variables and toward processes (Mackenzie 2000). Therefore, it is odd that we see little empirical evidence of logistics processes being modeled as the processes perceived by customers.

The second shortcoming of Mentzer, Flint, and Kent's (1999) work is the lack of comparison across market segments. Reported results suggest that market segments place varying degrees of importance on each dimension of LSQ. However, Mentzer, Flint, and Kent did not conduct comparison analysis. The purpose of our article is to improve on the LSQ conceptualization by addressing these two shortcomings. First, we conceptualize the nine components of LSQ in terms of a logical process. After confirming the validity and reliability of these nine dimensions, we empirically test a process model of LSQ and compare the process across market segments.

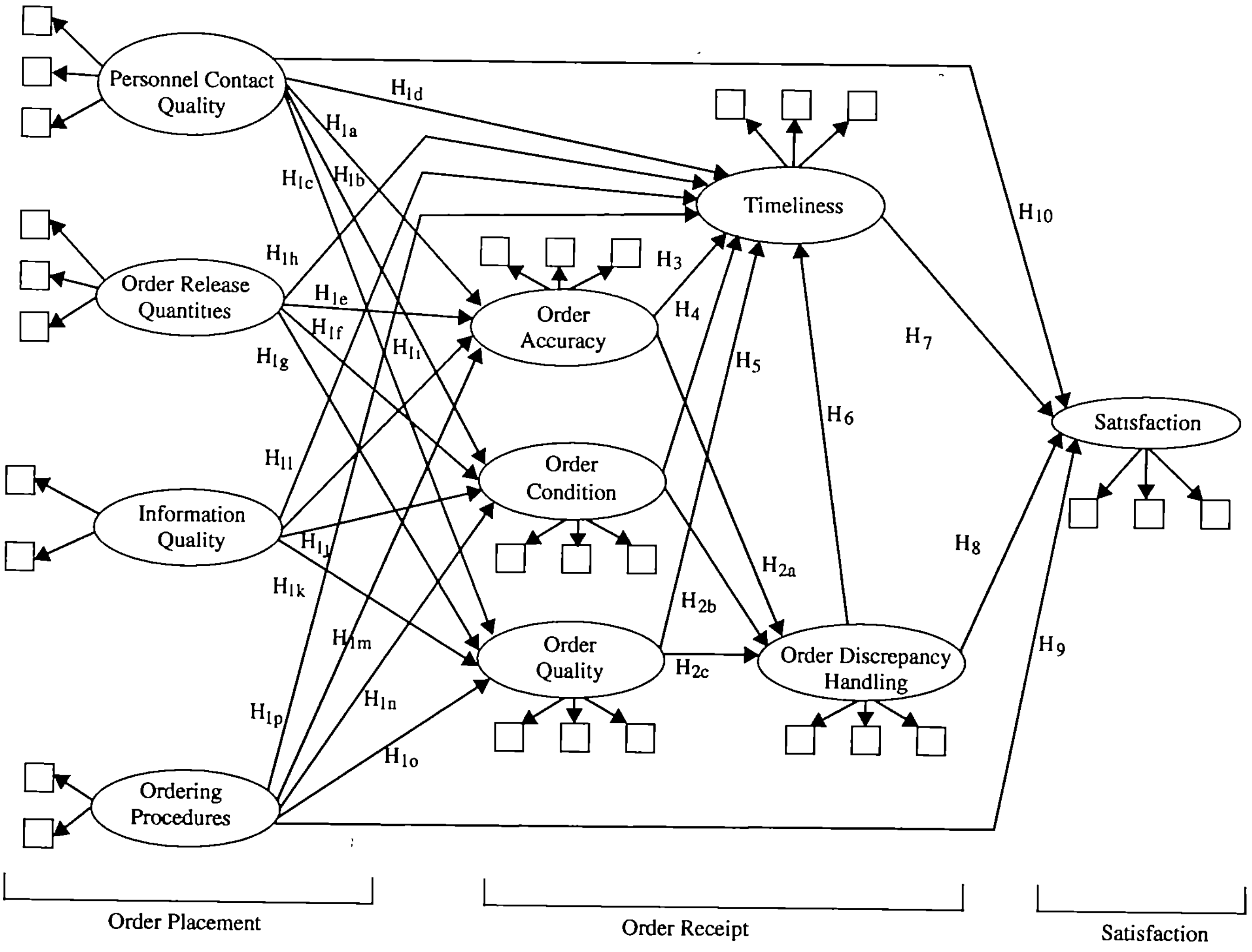
Although we could not find any articles in the logistics literature that offered a process conceptualization that includes all the dimensions tested here, we did find general presentations of the process that helped us establish a framework within which we could develop our model. Specifically, it is generally understood that customers place orders, orders are processed, orders are shipped, and orders are received (e.g., Byrne and Markham 1991; Mentzer, Gomes, and Krapfel 1989; Persson 1995). Customers have contact with this process when placing and receiving orders. When order receipt is not as expected, customers stay engaged in the logistics process through discrepancy handling. This general framework is presented in Figure 1. This framework helps us begin to place the nine components of LSQ in temporal order (Figure 2).

FIGURE 1
A General Customer-Perceived LSQ Framework


Activities related to ease of interaction during order placement
Perception of Order Placement Activities
Perception of Order Receipt
Satisfaction Level Response

First, order placement components include perceptions of interactions with DLA personnel when customers place orders (i.e., personnel contact quality), order release quantities, ordering information quality, and ordering procedures. This stage includes what is traditionally referred to as availability (e.g., Bienstock, Mentzer, and Bird 1997; Mentzer, Gomes, and Krapfel 1989). Until the order receipt stage, customers do not have any perceptions of the tangible products that are delivered. At the order receipt stage of LSQ, we place order accuracy, order condition, and order quality. These three components compose what is traditionally referred to as order condition or order fulfillment (e.g., Beinstock, Mentzer, and Bird 1997; Handfield and Nichols 1999). However, timeliness is also part of order receipt. This

FIGURE 2
Hypothesized Model of LSQ as a Process



is the first time customers can really assess the timeliness of the logistics process. Did the product arrive on time as ordered? Thus, perceptions of timeliness fit within the order receipt stage. Perceptions of these four order receipt components (i.e., order accuracy, order condition, order quality, and timeliness) are driven by the order placement components. However, customers sometimes do not receive orders as expected (Bienstock, Mentzer, and Bird 1997; Handfield and Nichols 1999; Langley and Holcomb 1991; Mentzer, Gomes, and Krapfel 1989). In this situation, customers ask the service provider to correct the mistake. Thus, dealing with service providers about orders not received as expected (i.e., discrepancy handling) is still part of order receipt activities but follows an evaluation of the accuracy, condition, and quality of the order. When discrepancies need to be addressed, timeliness is affected. Orders are not considered on time until they are received as ordered. Thus, timeliness is driven by the process of placing orders (i.e., personnel contact quality, order release quantities, information quality, and ordering procedures), the receipt of accurate orders in good condition and of good quality, and the handling of discrepancies.

Finally, satisfaction should be driven by the timeliness of orders received and the manner in which discrepancies are handled. We expect order accuracy, order condition, and order quality to operate through timeliness and through order discrepancy handling to influence satisfaction. This relatively straightforward process is logical, but we drew on an analysis of the qualitative phase of this research and general discussions about logistics services in the logistics literature that heretofore have not specifically modeled all these components of LSQ as a process. However, we also know from the service quality literature that interactions with the service provider are crucial to customer satisfaction (Bitner 1990; Bitner, Booms, and Mohr 1994; Bitner, Booms, and Tetreault 1990; DeCarlo and Leigh 1996; Grönroos 1982; Hartline and Ferrell 1996, Hartline, Maxham, and McKee 2000; Parasuraman, Zeithaml, and Berry 1985; Surprenant and Solomon 1987). This personal interaction reflects both the quality of the personnel and the ease with which customers can interact with the service provider. Incorporating these aspects of service quality into our process model of LSQ adds a direct link between personnel contact quality and customer satisfaction and another between ordering procedures (our construct that addresses ease of interaction) and satisfaction. The reason information quality and order release quantities (the two remaining order placement dimensions) do not operate directly on satisfaction is that they both address issues whose effects should be adequately explained by operating through order receipt dimensions alone.

This logic leads us to the hypothesized model presented in Figure 2. The specific hypotheses that emerge directly from this previous discussion of construct relationships, represented in Figure 2, are discussed next.

Hypothesized Relationships

We hypothesize that ordering-related constructs affect perceptions of the order when it arrives. Specifically, personnel contact quality, order release quantities, information quality, and ordering procedures all involve interactions customers have with their suppliers when they place orders. Each of these constructs should positively affect perceptions of order accuracy, order condition, order quality, and timeliness. This is reflected in H_1 and specifically in 16 distinct subhypotheses:

> H_1: Perceptions of ordering-related constructs positively affect order receipt perceptions: (a) personnel contact quality positively affects order accuracy, (b) personnel contact quality positively affects order condition, (c) personnel contact quality positively affects order quality, (d) personnel contact quality positively affects timeliness, (e) order release quantities positively affects order accuracy, (f) order release quantities positively affects order condition, (g) order release quantities positively affects order quality, (h) order release quantities positively affects timeliness, (i) information quality positively affects order accuracy, (j) information quality positively affects order condition, (k) information quality positively affects order quality, (l) information quality positively affects timeliness, (m) ordering procedures positively affects order accuracy, (n) ordering procedures positively affects order condition, (o) ordering procedures positively affects order quality, and (p) information quality positively affects timeliness

As previously discussed, we hypothesized that three of the order receipt constructs have an effect on perceptions of how DLA handles order discrepancies. If orders are inaccurate, of low quality, or in poor condition, customers are forced to interact with DLA to handle the discrepancies. If discrepancies are handled well, such that orders are eventually accurate, of acceptable quality, and in proper condition, customers should have positive perceptions of the supplier's order discrepancy procedures. H_2 addresses this issue and is reflected in three subhypotheses:

> H_2: Perceptions of order receipt positively affects perceptions of order discrepancy handling procedures: (a) order accuracy positively affects order discrepancy handling, (b) order condition positively affects order discrepancy handling, and (c) order quality positively affects order discrepancy handling.

Timeliness has long been discussed as an important component of logistics services. In addition to the hypothesized positive effects of the four order placement constructs on timeliness, we hypothesize that an order would be considered on time when the order was considered accurate, in good condition, and of acceptable quality. If these three criteria are not met, timeliness is also affected by when the discrepancies are handled adequately. Thus, we hypothesize that perceptions of order accuracy, order condition, order quality, and order discrepancy handling affect perceptions of timeliness.

> H_3: Perceptions of order accuracy positively affects perceptions of timeliness.
>
> H_4. Perceptions of order condition positively affects perceptions of timeliness.
>
> H_5. Perceptions of order quality positively affects perceptions of timeliness.
>
> H_6. Perceptions of order discrepancy handling positively affects perceptions of timeliness

Finally, on the basis of the literature, order timeliness and the handling of order discrepancies should have strong effects on satisfaction. However, as previously explained, two constructs, ordering procedures and personnel contact quality, tie in the broader service quality literature and model direct effects on satisfaction because they involve the ease-of-use aspects of the service and the interpersonal interactions that affect satisfaction. H_7 through H_{10} reflect these concepts:

H_7: Perceptions of timeliness positively affects satisfaction.

H_8: Perceptions of order discrepancy handling positively affects satisfaction.

H_9: Perceptions of ordering procedures positively affects satisfaction.

H_{10}. Perceptions of personnel contact quality positively affects satisfaction.

Methods

Samples and Data Collection

To examine the constructs and process model of LSQ, we collected samples from customer segments of the DLA. We sent customers in the DLA segments chosen for this study a survey packet including a cover letter, questionnaire, and return envelope. Survey respondents were responsible for logistics ordering from and coordination with DLA but are free to order from other suppliers besides DLA if they are not satisfied with DLA's performance. The total mailing included 5000 to general merchandise customers (n = 2008), 1500 to textiles and clothing customers (n = 505), 1500 to electronics customers (n = 608), and 500 to construction supplies customers (n = 250). The DLA provided the contact names at customer organizations. These numbers of returned, acceptable surveys reflect a 39.66% response rate.

We assessed nonresponse bias by contacting a random sample of 30 nonrespondents from each segment (i e., general merchandise, textiles and clothing, electronics, and construction supplies customers) by telephone and asking them to answer the three satisfaction questions (SA1, SA2, and SA3). The t-tests of group means revealed no significant differences between respondents and nonrespondents on any of the questions in any of the segments. Thus, nonresponse bias was not considered a problem.

Scale Development

We previously discussed the qualitative research and literature that helped us develop the nine LSQ constructs. We then developed, on the basis of the qualitative analysis, multi-item scales to tap into each of the nine constructs, plus satisfaction. The survey instrument was pretested for readability on a random sample of 200 DLA customers. Analysis of this pretest found that only four items required minor revision of wording for readability. We then mailed the refined instrument to the final sample of 8500 DLA customers in the four segments selected for the study.

Before hypothesis testing, we also engaged in scale purification. We extracted a random sample of 415 surveys from the responses from the four market segments (243 from general merchandise, 59 from textiles and clothing, 78 from electronics, and 35 from construction supplies). Each market segment represented approximately the same percentage of the purification sample as it did in the final analysis sample. Following basic descriptive analyses, including examination for coding errors, normality, skewness, kurtosis, means, and standard deviations, we subjected the purification data set to confirmatory factor analyses (CFA) by means of LISREL (Jöreskog and Sörbom 1996; Joreskog et al. 1999). In these analyses, items were grouped into a priori conceptualized scales. Modification indices (i.e., initially any greater than 10), standardized residuals (i.e., greater than 4), and fit statistics (i.e., comparative fit index [CFI], DELTA2, relative noncentrality index [RNI], and χ^2 with corresponding degrees of freedom [d.f.]) flagged potentially problematic items (Anderson and Gerbing 1988; MacCullum 1986).

We then examined these items within the theoretical context of each scale and deleted items on substantive and statistical grounds, if appropriate (Anderson and Gerbing 1988; MacCullum 1986). As a result, we eliminated 27 items from an initial pool of 52 designed to tap the nine LSQ scales, which resulted in 25 items to tap the nine LSQ scales and three items to tap satisfaction. Composite reliability and the average variance extracted compared with the highest variance shared with any other construct were both acceptable for each construct. In addition, the 28 purified items were found to be reliable and valid when evaluated on the basis of each item's error variance, modification index, and residual covariation. The refined scales are provided in Table 1. After the measurement analyses (described in more detail for the samples included in the study in the "Measurement Analysis" section), we proceeded to the hypothesis testing using the refined scales for each of the four final samples (which now had final sample sizes of 1765 for general merchandise, 446 for textiles and clothing, 530 for electronics, and 215 for construction supplies after the pretest responses were removed).

Analyses and Results

Using the refined scales in each of the four market segment data sets, we subjected the hypothesized constructs of LSQ to a series of CFAs to assess unidimensionality, reliability, and validity and then tested the effects of the nine LSQ constructs on one another and on satisfaction. The results are presented in Tables 2 through 6. Table 2 reports the means and standard deviations of all items for all four segments. Table 3 presents the results of the multisample CFA in which the focus was on testing the invariance of the measurement model across the four DLA segments. Table 3 also reports the testing of all possible pairs of customer segment samples. Table 4 summarizes additional measurement model test results, including parameter estimates, composite reliabilities, average variances extracted, and highest shared variances. Table 5 presents the CFA fit statistics for each DLA customer segment. Table 6 presents the results of all hypothesis tests. Correlation matrices for all four customer samples are provided in the Appendix. We next provide details of the analyses leading to these tables.

Measurement Model

To confirm construct unidmensionality, validity, and reliability, we evaluated the psychometric properties of the nine LSQ and one satisfaction constructs by using the method of CFA by means of LISREL (Jöreskog and Sorbom 1996; Jöreskog et al. 1999). Within this analysis, we incorporated both theoretical and statistical consideration in developing

TABLE 1
Scale Items

Scale	Item
Personnel Contact Quality	
PQ1	The designated DLA contact person makes an effort to understand my situation.
PQ2	Problems are resolved by the designated DLA contact person.
PQ3	The product knowledge/experience of DLA personnel is adequate.
Order Release Quantities	
OR1	Requisition quantities are not challenged.
OR2	Difficulties never occur due to maximum release quantities.
OR3	Difficulties never occur due to minimum release quantities.
Information Quality	
IQ1	Catalog information is available.
IQ2	Catalog information is adequate.
Ordering Procedures	
OP1	Requisitioning procedures are effective.
OP2	Requisitioning procedures are easy to use.
Order Accuracy	
OA1	Shipments rarely contain the wrong items.
OA2	Shipments rarely contain an incorrect quantity.
OA3	Shipments rarely contain substituted items.
Order Condition	
OC1	Material received from DLA depots is undamaged.
OC2	Material received direct from vendors is undamaged.
OC3	Damage rarely occurs as a result of the transport mode or carrier.
Order Quality	
OQ1	Substituted items sent by DLA work fine.
OQ2	Products ordered from DLA meet technical requirements.
OQ3	Equipment and/or parts are rarely nonconforming.
Order Discrepancy Handling	
OD1	Correction of delivered quality discrepancies is satisfactory.
OD2	The report of discrepancy process is adequate.
OD3	Response to quality discrepancy reports is satisfactory.
Timeliness	
TI1	Time between placing requisition and receiving delivery is short.
TI2	Deliveries arrive on the date promised.
TI3	The amount of time a requisition is on back-order is short.
Satisfaction	
SA1 (1 = "terrible," 5 = "excellent")	What is your general impression of the service DLA provides?
SA2 (1 = "very dissatisfied," 5 = "very satisfied")	Which word best describes your feelings toward DLA?
SA3 (1 = "very dissatisfied," 5 = "very satisfied")	How satisfied are you with DLA service?

Notes: All nine LSQ construct items were measured on a five-point Likert-like scale (1 = "strongly disagree," 5 = "strongly agree").

the scales (Anderson and Gerbing 1988). As such, our goal was to achieve a high level of scale reliability and validity and ensure that we had measured each theoretical facet of the intended construct. We evaluated the scales using CFA analyses for each of the four customer segment samples—general merchandise (n = 1765), textiles and clothing (n = 446), electronics (n = 530), and construction equipment and supplies (n = 215). We evaluated the model fits using the DELTA2 index, the RNI, and the CFI. These have been shown to be the most stable fit indices by Gerbing and Anderson (1992). The χ^2 statistics with corresponding degrees of freedom are included for comparison purposes (Jöreskog and Sörbom 1996).

Using these criteria, a multisample test of the four segments, in which the parameter estimates were constrained to be the same across the four segments (Model 1) (i.e., loadings, factor correlations, and error variances), resulted in acceptable fits to the data (Table 3). Allowing the loadings

TABLE 2
Means and Standard Deviations of the LSQ and Satisfaction Items

	General (n = 1765)		Textiles (n = 446)		Electronics (n = 530)		Construction (n = 215)	
Item	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
IQ1	4.03	1.11	4.13	1.30	4.05	1.22	4.01	1.23
IQ2	3.95	1.18	4.05	1.42	3.87	1.35	3.99	1.29
OP1	3.98	1.02	4.05	1.14	3.97	1.06	3.97	1.17
OP2	3.95	1.06	4.01	1.15	3.95	1.10	4.00	1.18
OR1	3.57	1.32	3.86	1.37	3.57	1.41	3.75	1.42
OR2	3.63	1.50	3.88	1 59	3.62	1.58	3.68	1.65
OR3	3.56	1.48	3.94	1.55	3.54	1.51	3.62	1.64
PQ1	4.44	1.60	4.59	1.60	4.32	1.53	4.39	1.53
PQ2	4.44	1.61	4.62	1.64	4.13	1.61	4.26	1.60
PQ3	4.50	1.53	4.65	1.51	4.33	1.48	4.39	1.52
OA1	3.88	1.02	4.02	1.16	3.86	1.08	3.87	1.17
OA2	3.83	1.05	4 04	1.15	3.84	1.08	3.86	1.24
OA3	3.88	1.01	4.09	1.13	3.81	1.12	3.93	1.16
OC1	3.82	1.05	4.10	1.11	3.91	1.04	3.93	1.17
OC2	3.89	1.04	4.24	1.15	3.96	1.01	3.99	1.17
OC3	3.83	1.08	4.06	1.19	3.83	1.03	3.84	1.16
OQ1	4.02	1.43	4.41	1.74	3.77	1.31	3.91	1.49
OQ2	4.09	.96	4.38	1.19	4.01	.90	4.14	1.07
OQ3	4.07	1.12	4.52	1.47	4.01	.99	4.15	1.08
OD1	3.89	1.47	4.04	1.68	3.69	1.47	3.96	1.57
OD2	3.78	1.50	3.80	1.70	3.56	1.53	3.79	1.61
OD3	3.96	1.60	4.24	1.69	3.80	1.63	3.89	1.71
TI1	3.98	1.84	4.67	2.09	3.78	1.65	3.92	1.98
TI2	3.71	1.97	4.58	2.21	3.54	1.77	3.76	2.05
TI3	3.72	2.00	4.44	2.27	3.38	1.84	3.63	2.06
SA1	3.54	.69	3.64	.78	3.48	.74	3.45	.71
SA2	3.62	.71	3.69	.76	3.52	.79	3.51	.74
SA3	3.61	.74	3.69	.77	3.51	80	3.51	.74

Notes. PQ = personnel contact quality, OR = order release quantities, IQ = information quality, OP = ordering procedures, OA = order accuracy, OC = order condition, OQ = order quality, OD = order discrepancy handling, TI = timeliness, and SA = satisfaction. All nine LSQ construct items were measured on a five-point Likert-like scale (1 = "strongly disagree," 5 = "strongly agree"). Satisfaction items were measured on five-point scales (see Table 1).

to be estimated independently from one another in the four segments resulted in similar fit statistics (Model 2). On the basis of the χ^2 difference test suggested by Anderson and Gerbing (1988), the constrained and unconstrained measurement models were found not to differ significantly. As a further examnination of the potential for differences, multisample tests were conducted on all possible pairs of the customer segment samples. As with the four-sample test, fit indices were acceptable, and no significant differences were found between Models 1 and 2 (Table 3). Similarly, no differences were found between the models when the error variances were allowed to be estimated freely in addition to the loadings (Model 3) or when the loadings were allowed to be invariant but the error variances were allowed to differ (Model 4).

Next we assessed the reliability of the measures. Within the CFA setting, composite reliability is calculated using the procedures outlined by Fornell and Larcker (1981) and based on the work by Werts, Linn, and Jöreskog (1974). The formula specifies that $CR_{\eta} = (\Sigma\lambda\gamma_i)^2/[(\Sigma\lambda\gamma_i)^2+(\Sigma\varepsilon_i)]$, where CR_{η} = composite reliability for scale η, $\lambda\gamma_i$ = standardized loading for scale item γ_i, and ε_i = measurement error for scale item γ_i. We also examined the parameter estimates and their associated t-values and assessed the average variance extracted for each construct (Anderson and Gerbing 1988). As is shown in Table 4, the reliabilities for the ten constructs ranged between .76 (order quality for construction segment) and .95 (personnel contact quality for general, textiles, and electronics segments), indicating acceptable levels of reliability for the constructs (Fornell and Larcker 1981). The

TABLE 3
Multisample Measurement Model Results

	Model 1	Model 2	Model 1 and Model 2 Comparison
All four segments χ^2	4233.03	4186.49	46.54[a]
d.f.	1745	1655	90
DELTA2	.96	.96	
RNI	.96	.96	
CFI	.96	.96	
Segment Pairings			
General/textiles χ^2	2415.70	2400.32	15.38[b]
d.f.	815	785	30
General/electronics χ^2	2189.96	2182.74	7.22[b]
d.f.	815	785	30
General/construction χ^2	2061.40	2039.29	22.11[b]
d.f.	815	785	30
Textiles/electronics χ^2	1930.57	1909.60	20.97[b]
d.f.	815	785	30
Textiles/construction χ^2	1573.94	1564.54	9.4[b]
d.f.	815	785	30
Electronics/construction χ^2	1574.59	1549.78	24.81[b]
d.f.	815	785	30

[a] Model 1 and Model 2 comparison by means of difference in χ^2 and degrees of freedom indicates no significant difference between the models. Thus, constructs are valid in four customer segments.

[b] Model 1 and Model 2 comparison by means of difference in χ^2 and degrees of freedom indicates no significant difference between the models. Thus, constructs are valid in all customer segments.

order quality scale is the only scale below a composite reliability of .79, suggesting that all other scale reliabilities are excellent (Gerbing and Anderson 1992).

We established discriminant validity by calculating the shared variance between all possible pairs of constructs and verifying that they were lower than the average variance extracted for the individual constructs (Fornell and Larcker 1981; Jöreskog et al. 1999). The shared variance was calculated as $\gamma^2 = 1 - \psi$, where γ^2 = shared variance between constructs and the diagonal element of ψ indicates the amount of unexplained variance. Because η and ε are standardized, γ^2 is equal to the r^2 between the two constructs. We calculated average variance extracted using the following formula: $V_\eta = \Sigma\lambda\gamma_i^2/(\Sigma\lambda\gamma_i^2 + \Sigma\varepsilon_i)$, where V_η = average variance extracted for η, $\lambda\gamma_i$ = standardized loading for scale item γ_i, and ε_i = measurement error for scale item γ_i. The shared variances between pairs of all possible scale combinations ranged from a low of 8% to a high of 59% between the various scale combinations (Table 4). The average variances extracted ranged between 52% and 85%, all having higher average variances extracted than the shared variances among all applicable pairs of scales (Table 4) To assess discriminant validity further, in line with suggestions by Anderson (1987) and Bagozzi and Phillips (1982), we assessed pairs of scales in a series of two-factor confirmatory models using LISREL. We ran each model twice—once constraining the phi coefficient (ϕ) to unity and once freeing the parameter. We then used a χ^2 test to test for differences between models. In all cases, the χ^2 results were higher in the constrained models, thereby indicating discriminant validity between the constructs. These results, in combination with fit indices for each customer segment sample (i.e., in Table 5, DELTA2, RNI, and CFI exceed .90 for all four segments), suggest that the measurement scales are reliable and valid in all four customer segments in this study.

Finally, we examined the validity of each of the 28 individual items in the analysis. First, we maintained our predetermined criteria of modification indices (<10) and residuals (<4). Second, we tested the potential differences among each item (28 items) across the four samples relative to its theoretical construct (10 constructs). This test involved constraining appropriate sets of β estimates, one parameter estimate at a time, to be equal and different across the four samples (general, textiles, electronics, and construction) and then evaluating whether the resulting change in the χ^2 value was significant with the appropriate difference in degrees of freedom (Bagozzi and Heatherton 1994). The results indicated that all 28 items were robust across the four samples. The $\chi^2\Delta$s ranged from .21 to 6.47 with a d.f.Δ = 3, which was lower than the χ^2 value of 11.34 to be significant at the $p < .01$ level. As such, the ten scales and their 28 items were considered reliable and valid in the context of this study.

TABLE 4
Results of the Measurement Model Analyses of LSQ and Satisfaction

Item Loading **Reliability** **Variance Extracted** **Highest Shared Variance**	**General (n = 1765)**	**Textiles (n = 446)**	**Electronics (n = 530)**	**Construction (n = 215)**
Personnel Contact Quality				
PQ1	.93	.89	.93	.89
PQ2	.96	.93	.97	.92
PQ3	.92	.89	.92	.86
Composite reliability	.95	.95	.95	.94
Variance extracted	87%	86%	87%	85%
Highest shared variance	14%	16%	12%	21%
Order Release Quantities				
OR1	.66	.59	.64	.62
OR2	.91	.86	.92	.83
OR3	.86	.83	.86	.78
Composite reliability	.85	.83	.85	.82
Variance extracted	65%	62%	65%	62%
Highest shared variance	15%	25%	14%	31%
Information Quality				
IQ1	.81	.81	.85	.78
IQ2	.91	.90	.92	.86
Composite reliability	.85	.85	.86	.84
Variance extracted	75%	74%	76%	73%
Highest shared variance	8%	13%	13%	26%
Ordering Procedures				
OP1	.91	.88	.91	.85
OP2	.84	.84	.85	.79
Composite reliability	.86	.86	.86	.85
Variance extracted	76%	76%	76%	74%
Highest shared variance	15%	25%	18%	32%
Order Accuracy				
OA1	.89	.83	.91	.81
OA2	.90	.85	.91	.79
OA3	.79	.77	.77	.72
Composite reliability	.89	.88	.89	.87
Variance extracted	73%	70%	72%	68%
Highest shared variance	49%	59%	52%	58%
Order Condition				
OC1	.92	.86	.93	.81
OC2	.86	.80	.90	.78
OC3	.66	.69	.66	.71
Composite reliability	.85	.84	.86	.84
Variance extracted	66%	65%	67%	65%
Highest shared variance	49%	59%	52%	58%
Order Quality				
OQ1	.65	.63	.70	.62
OQ2	.83	.77	.86	.73
OQ3	.78	.71	.81	.72
Composite reliability	.79	.77	.81	.76
Variance extracted	56%	53%	59%	52%
Highest shared variance	26%	36%	29%	50%
Order Discrepancy Handling				
OD1	.89	.84	.88	.79
OD2	.91	.88	.93	.83
OD3	.77	.73	.75	.73
Composite reliability	.89	.88	.89	.87
Variance extracted	72%	70%	72%	69%
Highest shared variance	26%	27%	20%	41%

TABLE 4
Continued

Item Loading Reliability Variance Extracted Highest Shared Variance	General (n = 1765)	Textiles (n = 446)	Electronics (n = 530)	Construction (n = 215)
Timeliness				
TI1	.91	.93	.88	.88
TI2	.94	.93	.93	.90
TI3	.93	.93	.92	.90
Composite reliability	.94	.95	.94	.94
Variance extracted	85%	85%	85%	84%
Highest shared variance	12%	23%	13%	24%
Satisfaction				
SA1	.83	.84	.85	.83
SA2	.92	.92	.92	.92
SA3	.92	.92	.93	.92
Composite reliability	.92	.92	.92	.92
Variance extracted	80%	80%	80%	80%
Highest shared variance	14%	15%	18%	13%
t-Value range	28.79–55.37	13.85–28.53	16.16–31.31	9.78–19.82

TABLE 5
Fit Statistics for Measurement Model for Each Customer Segment

	General (n = 1765)	Textiles (n = 446)	Electronics (n = 530)	Construction (n = 215)
DELTA 2	.98	.97	.97	.97
RNI	.98	.96	.98	.95
CFI	.98	.96	.97	.95
χ^2	1231.25	774.38	684.86	603.31
d.f.	350	350	350	350

Hypothesis Testing

The results of the hypothesis tests are provided in Table 6, including the parameter estimates, their corresponding t-values, and the fit statistics. We tested the hypothesized model in Figure 2 using LISREL (Jöreskog and Sörbom 1996; Jöreskog et al. 1999). All scale items were used in the analysis to represent the ten latent constructs. We used the correlation matrix for each segment as input to the SEM analyses (see the Appendix). In testing the hypotheses, we centered our attention on examining the relative emphasis placed on each construct within each segment as opposed to comparing paths across samples.

The main objective of the hypothesis testing was to examine the relative importance of each service quality construct in each of the four distinct DLA customer segments. Initially, however, we examined the implicit proposition that the four DLA segments are different in terms of the service quality process. As such, we conducted a multisample analysis involving all four DLA segments to assess the possible invariance of the model relationships across the segment samples (using procedures similar to the ones employed to assess the individual items in the measurement analysis). The multisample analysis indicated that the models involving constrained (χ^2 = 22082.65, d.f. = 1761) and unconstrained (χ^2 = 14811.08, d.f. = 1602) loadings are statistically different ($\Delta\chi^2$ = 7271.57, d.f. = 159, $p < .01$). Thus, these results support our contention that the developed service quality process model (Figure 2) should be examined independently in the four DLA samples.

The fit statistics indicate that in all four segments, the hypothesized model achieves acceptable fit (Table 6). However, a different number of hypotheses was supported in each segment. Within the general customer segment, 23 of the 27 hypotheses were supported at the $p < .01$ level (Figure 3). In the textiles segment, 15 of the 27 hypotheses were supported at the $p < .01$ level (Figure 4). In the electronics segment, 12 of the 27 hypotheses were supported at the $p < .01$ level (Figure 5). In the construction segment, 11 of the 27 hypotheses were supported at the $p < .01$ level (Figure 6).

The finding that the model generally fits the data for each customer segment (on the basis of fit indices) but that some paths are not significant in certain segments and that the significant paths differ across segments, suggests that customer segments place different levels of emphasis on certain components of LSQ. As such, we find support for the differences across the four DLA segments at the path level (hypothesis) in addition to the explanatory level (as tested in the multisample analysis).

In the general segment, three of four order placement constructs (i.e., personnel contact quality, order release quantities, ordering procedures), order accuracy, and order discrepancy handling drove perceptions of timeliness. Order condition and order quality seemed to work through order discrepancy handling. In the textiles segment, only personnel contact quality and order quality drove perceptions of timeliness. In the electronics segment, timeliness perceptions were driven entirely by order placement constructs (i.e., personnel contact quality, order release quantities, ordering procedures) and not by the order receipt constructs

TABLE 6
Results of H_1 to H_{10} for Four DLA Customer Segments

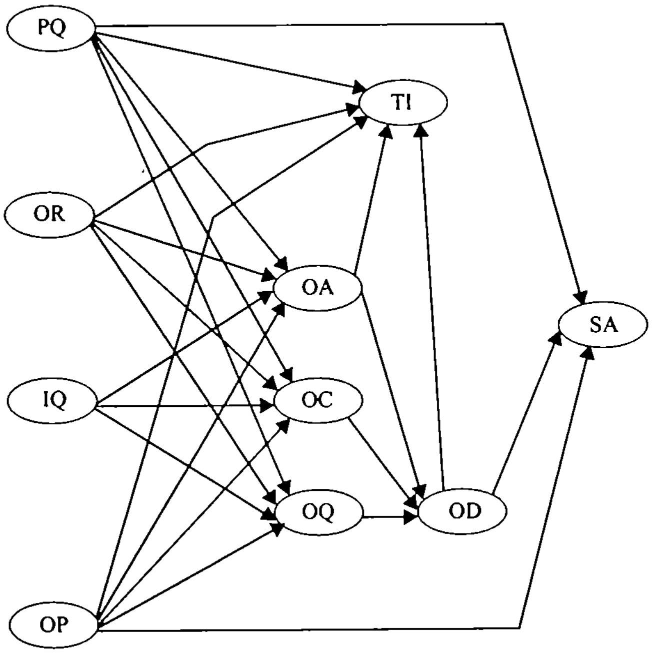
Parameter estimate/ t-Value	General (n = 1765)		Textiles (n = 446)		Electronics (n = 530)		Construction (n = 215)	
H_{1a} (PQ → OA) +	.12	Supported	.13	Supported	.06		.05	
t-Value	4.75		2.64		1.17		.78	
H_{1b} (PQ → OC) +	.17	Supported	.09		.11		.11	
t-Value	6.55		1.72		2.20		1.69	
H_{1c} (PQ → OQ) +	.24	Supported	.21	Supported	.07		.04	
t-Value	8.70		3.84		1.44		.58	
H_{1d} (PQ → TI) +	.20	Supported	.15	Supported	.13	Supported	.23	Supported
t-Value	7.73		2.89		2.84		3.15	
H_{1e} (OR → OA) +	.25	Supported	.26	Supported	.23	Supported	.34	Supported
t-Value	8.45		4.39		3.96		4.35	
H_{1f} (OR → OC) +	.25	Supported	.38	Supported	.21	Supported	.37	Supported
t-Value	8.29		6.19		3.75		4.80	
H_{1g} (OR → OQ) +	.24	Supported	.31	Supported	.34	Supported	.49	Supported
t-Value	7.73		4.71		5.71		5.40	
H_{1h} (OR → TI) +	.16	Supported	.09		.21	Supported	.34	Supported
t-Value	5.10		1.26		3.51		2.69	
H_{1i} (IQ → OA) +	.08	Supported	.18	Supported	.08		.02	
t-Value	2.96		3.48		1.54		.27	
H_{1j} (IQ → OC) +	.11	Supported	.13		.10		.09	
t-Value	4.08		2.50		1.90		1.10	
H_{1k} (IQ → OQ) +	.11	Supported	.17	Supported	.17	Supported	.08	
t-Value	3.67		2.97		3.36		.98	
H_{1l} (IQ → TI) +	.03		.01		.07		–.05	
t-Value	–.97		.14		1.36		–.52	
H_{1m} (OP → OA) +	.23	Supported	.25	Supported	.13		.47	Supported
t-Value	7.68		4.50		2.25		4.35	
H_{1n} (OP → OC) +	.19	Supported	.20	Supported	.13		.37	Supported
t-Value	6.26		3.62		2.30		3.73	
H_{1o} (OP → OQ) +	.17	Supported	.15		.07		.35	Supported
t-Value	5.54		2.46		1.20		3.35	
H_{1p} (OP → TI) +	.17	Supported	.01		.17	Supported	.24	
t-Value	5.35		–.08		3.05		1.63	
H_{2a} (OA → OD) +	.11	Supported	.16	Supported	.23	Supported	.26	Supported
t-Value	4.51		3.06		4.84		3 14	
H_{2b} (OC → OD) +	.24	Supported	.17	Supported	.24	Supported	.13	
t-Value	9.53		3.27		5.12		1.63	
H_{2c} (OQ → OD) +	.42	Supported	.42	Supported	.25	Supported	.47	Supported
t-Value	14.29		6.75		5.04		4.74	
H_3 (OA → TI) +	.08	Supported	.13		.01		.10	
t-Value	2.93		–2.26		–.21		.92	
H_4 (OC → TI) +	–.04		.08		.06		–.14	
t-Value	–1.52		1.32		1.12		–1.36	
H_5 (OQ → TI) +	.05		.42	Supported	.09		–.11	
t-Value	1.44		5.28		1.63		–.77	

TABLE 6
Continued

Parameter estimate/ t-Value	General (n = 1765)		Textiles (n = 446)		Electronics (n = 530)		Construction (n = 215)	
H_6 (OD → TI) +	.10	Supported	.05		.01		.13	
t-Value	3.32		.80		–.14		1.26	
H_7 (TI → SA) +	.07		.12		.05		–.05	
t-Value	2.53		2.50		1.21		–.67	
H_8 (OD → SA) +	.07	Supported	.07		.15	Supported	–.05	
t-Value	2.57		1.41		3.41		–.58	
H_9 (OP → SA) +	.41	Supported	.35	Supported	.46	Supported	.57	Supported
t-Value	14.05		6.48		8.68		5.22	
H_{10} (PQ → SA) +	.10	Supported	.13		.11		–.03	
t-Value	4.03		2.48		2.48		–.32	
Fit Indices								
DELTA2	.89		.88		.87		.89	
RNI	.89		.87		.87		.88	
CFI	.89		.87		.87		.88	
χ^2	4622.68		1798.98		1840.50		1064.89	
d.f.	368		368		368		368	

Notes: PQ = personnel contact quality, OR = order release quantities, IQ = information quality, OP = ordering procedures, OA = order accuracy, OC = order condition, OQ = order quality, OD = order discrepancy handling, TI = timeliness, and SA = satisfaction. Significant hypotheses are supported at $p < .01$.

FIGURE 3
General Segment Significant Paths ($p < .01$)



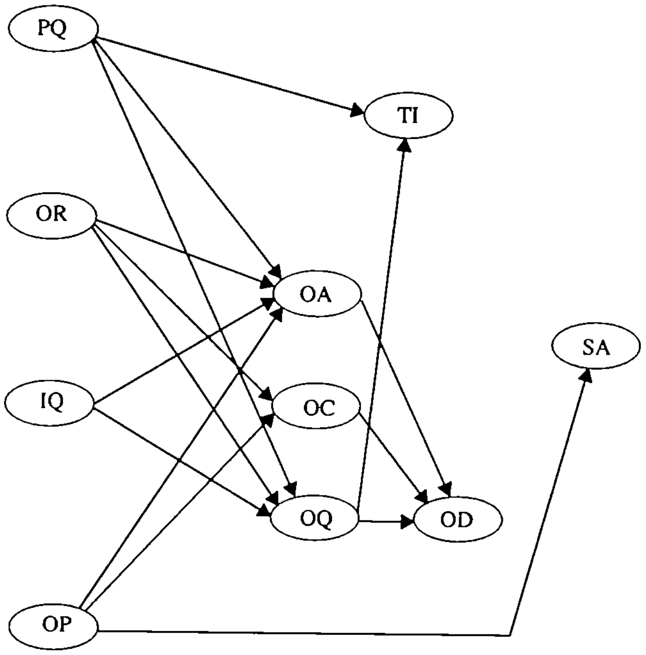
Notes: PQ = personnel contact quality, OR = order release quantities, IQ = information quality, OP = ordering procedures, OA = order accuracy, OC = order condition, OQ = order quality, OD = order discrepancy handling, TI = timeliness, and SA = satisfaction.

of accuracy, condition, and quality or the handling of discrepancies. Similarly, in the construction segment, only two order placement constructs (i.e., personnel contact quality, order release quantities) drove timeliness perceptions. Thus, customers' perceptions of timeliness are driven by different constructs depending on the market segment in which they exist. Similar comparisons can be made for each of the hypotheses by examining the tables and figures. However, a few intriguing findings are worth mentioning.

The first relates to drivers of satisfaction for each segment. The constructs that drive satisfaction are the ones we might conclude are the most important to the sample. For the construction and textiles segments, only ordering procedures seemed to drive satisfaction, although we also note that for the textiles segment, timeliness and personnel contact quality were significant drivers of satisfaction at $p < .05$. However, this is interesting given all the emphasis logistics places on receiving the right order at the right time in the right condition. This finding indicates that these customers care most about the ease and effectiveness of the ordering process itself and not necessarily about timeliness. In contrast, both ordering procedures and order discrepancy handling seemed to drive satisfaction for the electronics segment. For the general segment, order discrepancy handling, ordering procedures, and personnel contact quality drove satisfaction. Timeliness drove satisfaction at the $p < .05$ significance level for the general segment. Thus, for these four segments, there were factors that drove perceptions of timeliness, yet timeliness was not a major factor in satisfaction levels. The question then becomes, Why? Follow-up

FIGURE 4

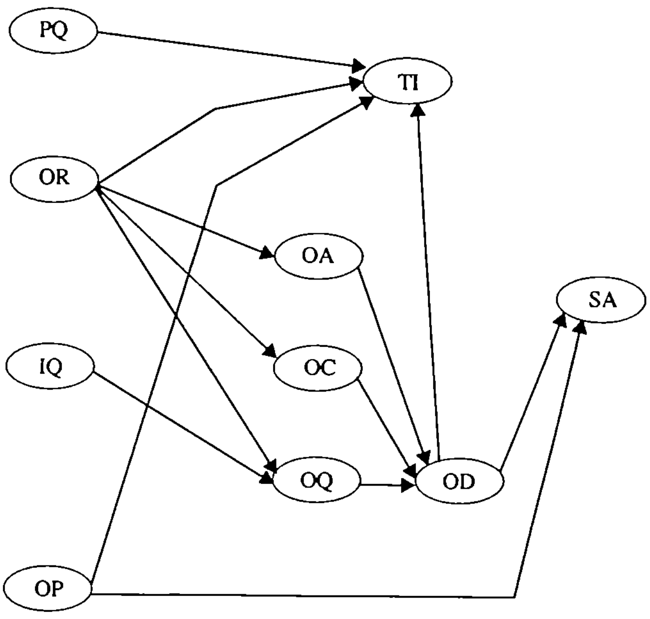
Textiles Segment Significant Paths ($p < .01$)



Notes: PQ = personnel contact quality, OR = order release quantities, IQ = information quality, OP = ordering procedures, OA = order accuracy, OC = order condition, OQ = order quality, OD = order discrepancy handling, TI = timeliness, and SA = satisfaction.

FIGURE 5

Electronics Segment Significant Paths ($p < .01$)



Notes: PQ = personnel contact quality, OR = order release quantities, IQ = information quality, OP = ordering procedures, OA = order accuracy, OC = order condition, OQ = order quality, OD = order discrepancy handling, TI = timeliness, and SA = satisfaction

research with these segments is needed to uncover that answer. We can speculate that there is something similar across these DLA customer segments that reduces the importance of timeliness; however, customer segments of other logistics service providers may place a much higher value on timeliness, as the literature suggests. Again, this finding and others like it suggest that customers' perceptions about various aspects of LSQ and the relative importance they play in determining customer satisfaction differ by market segment.

Conclusions

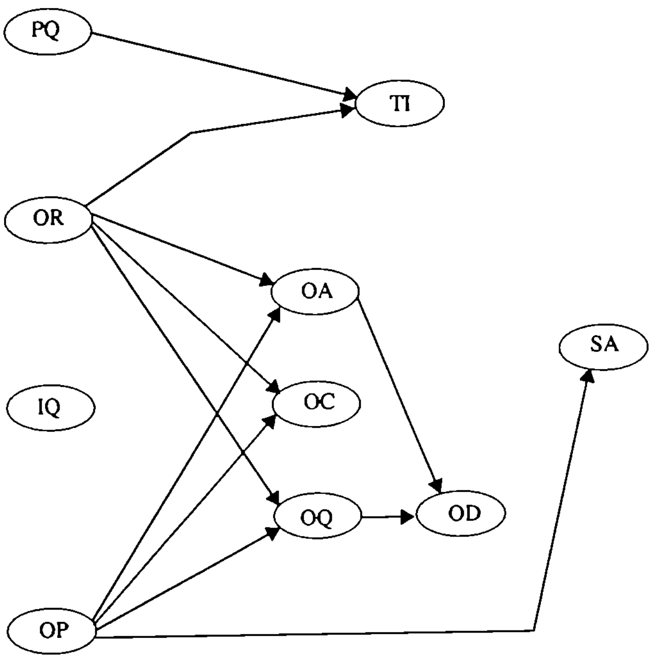
The purpose of this study was to identify potential components of LSQ that apply across multiple customer segments and examine whether different customer segments place different weights on the components. We know of no other studies that have conceptualized LSQ as a process and then examined it in this way. Examination of these issues should contribute to firms' efforts at using logistics services to differentiate themselves in the marketplace. The results from our study have specific implications for both marketing management and further research.

Managerial Implications

In this study, we presented nine potentially important components of LSQ. The items we generated to tap these components were found to be valid and reliable measures across four customer segments of the DLA. This means that marketing managers, in coordination with their firms' logisticians, can focus on developing services that address these nine components. We found, at least for one organization, that all nine components are important for at least one customer segment. These nine components reveal that LSQ is a complex concept demanding a great deal of attention from supplying firms.

This study also found that LSQ should be conceptualized as a process, rather than merely as a single concept or second-order construct. When viewed as a process, suppliers can identify the drivers of various LSQ perceptions. Our study suggests that customers' perceptions of suppliers' LSQ begin to form as soon as customers try to place orders, and the perceptions develop until customers receive complete and accurate orders, in good condition, with all discrepancies addressed. The process view enables marketers to see the interrelationships among LSQ components.

FIGURE 6
Construction Segment Significant Paths ($p < .01$)



Notes: PQ = personnel contact quality, OR = order release quantities, IQ = information quality, OP = ordering procedures, OA = order accuracy, OC = order condition, OQ = order quality, OD = order discrepancy handling, TI = timeliness, and SA = satisfaction.

Finally, we found that customer segments place their emphasis on different components of LSQ, and we believe that this initial evidence will be corroborated by other studies; however, we also found strong similarities across segments. These similarities suggest that in some areas, managers may be able to develop processes that apply to all customer segments. Specifically, personnel contact quality had a positive effect on perceptions of timeliness in all four segments. Perceptions of the effectiveness and ease of use for ordering procedures had the most consistent positive effect on satisfaction. This indicates that the process of placing orders may be more important than order receipt in creating satisfied customers—how the job is done more than what gets done.

Thus, we suggest that managers make their own assessments of the relative weight their customer segments place on each of the constructs developed in this study. If results from their customer segments reveal similar relative emphases, logistics services can be designed to address all these segments similarly, enabling suppliers to take advantage of scale efficiencies. If, conversely, results from suppliers' customer segments reveal marked differences in the LSQ components that customers value, suppliers ought to customize their services to cater to specific customer segment desires.

This kind of thinking enables logistics services to be seen as a differential competitive weapon that can not only improve efficiencies by reducing costs but also improve marketing effectiveness by contributing to customization processes that generate greater revenue for supplier firms.

Research Implications

This study also has implications for further research on LSQ. Although we expand beyond the PDS constructs to include additional constructs in the broader concept of LSQ, the nine constructs identified and tested in this study may not be the only components of LSQ. Although we aimed at being comprehensive in our examination of LSQ issues, further research ought to explore other possibilities. Indeed, such research may lead to the uncovering of omissions and misrepresentations of the relationships tested in the current study and possibly to further conceptual refinement and extension. For example, there may be other logical structures of the interrelationships among the LSQ constructs, especially in contexts other than the ones studied in this research. Finally, we need to improve the operationalization of the constructs. Our reliability and validity assessments showed strong support for the constructs in this study, but two constructs were operationalized with only two items.

As operationalized in this study, LSQ focuses primarily on attributes of the supplier organization. This conceptualization needs to be placed into context with related constructs, such as customers' perceived benefits, sacrifices, and value and their effects on customer satisfaction—concepts all presented in the customer value literature (e.g., Woodruff 1997). Along these lines, LSQ must be linked to other customer outcome measures, such as loyalty, word of mouth, and price sensitivity, as well as supplier outcome measures, such as revenues, market share, and profitability.

Although this study contributes to both business practice and scholastic research, it is limited by several factors. First, the study's reliance on survey methodology as its primary means of data collection may limit the results because of common method bias. Replication studies, as well as studies using maximally dissimilar methods in similar and dissimilar samples over a period of time would lend support to the contention that the concepts measured in this study indeed exist and are stable. A second limitation is that the survey was administered to customer segments of only one organization and this survey was developed on the basis of focus groups and interviews within these same customer segments. Although the samples for each segment were of adequate size, they were from segments of the same supplier organization. Therefore, conclusions from this study may not transfer to customer segments of other firms. Items used to operationalize constructs in this study were worded to be relevant to DLA customers. Other suppliers of logistics services will need to modify the wording of individual items such that they are relevant to their customers yet still maintain the reliability and validity of the constructs they are designed to measure.

APPENDIX
Correlation Matrix

A: General Customer Segment

	IQ1	IQ2	OP1	OP2	OR1	OR2	OR3	TI1	TI2	TI3	OA1	OA2	OA3	OQ1	OQ2	OQ3	OC1	OC2	OC3	OD1	OD2	OD3	PQ1	PQ2	PQ3	SA1	SA2	SA3
IQ1	1.0																											
IQ2	.72	1.0																										
OP1	.26	.27	1.0																									
OP2	.23	.25	.74	1 0																								
OR1	.17	.21	.35	.34	1.0																							
OR2	.19	.23	.31	.30	.58	1.0																						
OR3	.20	.23	.30	.29	.54	.76	1.0																					
TI1	.14	.14	.29	.27	22	.26	.25	1.0																				
TI2	.13	.13	.26	.23	.25	.30	.28	.84	1.0																			
TI3	.11	.13	.26	.26	27	.32	.30	.84	.86	1.0																		
OA1	.16	.18	29	.26	.27	.28	.26	.23	.21	24	1.0																	
OA2	.18	19	.27	.28	.30	.28	.26	.26	24	.26	78	1.0																
OA3	16	.20	.25	.24	.30	.28	.26	.22	.21	25	.66	68	1.0															
OQ1	.16	.19	.21	.18	.27	.30	.28	.25	.27	.27	27	.30	.32	1.0														
OQ2	.19	.19	.28	.24	.24	.24	.22	.21	.21	.21	.36	.36	.36	.51	1.0													
OQ3	.16	.16	.21	.18	.22	23	.22	20	.21	.21	.35	.36	.38	.45	.64	1.0												
OC1	.19	.21	.27	.26	.30	.28	.24	.22	.23	.25	62	.61	.56	.30	.39	.37	1.0											
OC2	.17	.21	24	.19	.27	.29	.25	.19	.19	.20	.56	.55	53	.31	.37	34	.77	1 0										
OC3	.18	.21	.26	.24	.29	.27	.25	.18	.18	.19	.50	48	.46	.34	.46	.46	.56	.50	1.0									
OD1	.15	.17	.22	.20	.27	.34	.31	.27	.27	30	.36	.37	36	.40	.39	.35	.39	.37	.44	1.0								
OD2	.13	.16	.21	20	.28	.31	.30	.24	.24	.26	.33	.34	.33	.36	.35	.33	.37	.36	.39	.81	1.0							
OD3	.15	.19	.20	.16	26	.32	.32	.28	.29	.29	30	.30	.31	.42	.40	.38	.34	.33	.37	65	69	1.0						
PQ1	.19	.19	.23	.24	.23	.27	.26	.30	.32	31	.20	24	23	.27	.23	.24	.26	.23	23	.31	.31	33	1.0					
PQ2	.16	.16	.22	.21	.23	.29	28	.30	.33	.32	.21	.23	.21	.30	.25	.27	.27	.23	.24	32	.32	.33	.89	1 0				
PQ3	16	.17	.21	.21	.24	.28	.27	.29	.32	.31	.23	.24	.23	.29	.24	.27	.27	.24	.23	.31	.31	.32	.85	.88	1.0			
SA1	.26	.22	.34	.29	.15	.19	16	.24	.21	.21	.18	.20	.15	.15	.16	.10	.19	.15	.17	.20	.17	.20	.22	.20	.19	1.0		
SA2	.26	.26	.33	.29	.14	.22	.19	.25	.22	.23	.16	.20	15	.14	.18	.13	.19	.14	.16	.21	.20	.21	.25	.23	.23	.77	1.0	
SA3	.25	.23	.32	.30	.13	.20	.17	.23	.19	21	.17	21	.15	.12	.17	.13	.18	.11	.17	.21	19	21	.22	.20	.20	.74	.84	1.0

APPENDIX
Continued

B: Textiles Customer Segment

	IQ1	IQ2	OP1	OP2	OR1	OR2	OR3	TI1	TI2	TI3	OA1	OA2	OA3	OQ1	OQ2	OQ3	OC1	OC2	OC3	OD1	OD2	OD3	PQ1	PQ2	PQ3	SA1	SA2	SA3
IQ1	1.0																											
IQ2	74	1.0																										
OP1	.27	.34	1.0																									
OP2	.28	.35	.83	1.0																								
OR1	19	.22	.39	.33	1.0																							
OR2	.19	.25	.41	.41	.56	1 0																						
OR3	.26	.32	.48	.45	.50	.82	1.0																					
TI1	.16	21	.26	.24	.18	30	.36	1.0																				
TI2	.16	.20	.21	.20	.21	.33	.38	.93	1 0																			
TI3	.16	.20	.24	.22	.23	.32	.37	.92	.91	1.0																		
OA1	.25	28	.41	.37	.30	36	.35	.24	.24	24	1.0																	
OA2	.26	.32	.43	.37	.33	.39	.39	26	.25	.26	.81	1.0																
OA3	31	.32	38	38	.33	.34	.35	28	.28	.30	.69	.74	1.0															
OQ1	.22	.23	.28	.28	.26	32	34	41	.42	41	.39	.39	.50	1.0														
OQ2	27	.29	.31	32	.33	.33	.34	31	.33	.31	.44	46	50	50	1.0													
OQ3	16	.22	.23	.24	27	.31	.32	.39	40	38	.41	.44	.45	.48	60	1.0												
OC1	.24	.27	.40	.38	.35	.45	.42	.31	.31	30	.69	.68	.66	.41	.45	.42	1.0											
OC2	22	.24	.37	37	.37	.39	39	.27	.28	.26	.59	.61	64	.42	46	.44	.79	1.0										
OC3	.26	.28	.29	.33	.32	.38	.40	30	31	32	.59	.59	.57	.42	.45	.49	66	.60	1 0									
OD1	.20	.18	.36	.32	.36	.40	.42	.30	.33	.33	.38	42	44	.38	.41	.33	.42	.36	41	1 0								
OD2	.20	.24	.35	.31	.33	.35	.36	.30	30	32	37	.42	.42	.38	.41	.32	.42	.36	.41	.78	1.0							
OD3	.21	.22	.24	.25	.29	.32	.34	.32	34	.33	.31	.36	.33	.35	.39	.38	.37	.32	.41	.60	.70	1.0						
PQ1	.20	.24	.35	.28	.31	.38	.37	.38	.36	.37	29	.31	.31	.37	.32	.25	.30	.24	.26	.30	.32	.29	1.0					
PQ2	.20	.25	.30	.25	.31	.42	.39	.32	.31	.32	.29	.34	.31	.36	.26	.25	.32	.25	.27	.31	.34	.33	.87	1.0				
PQ3	.20	.25	.33	.27	.32	.41	42	.37	.36	.36	.31	.34	.33	.38	.31	.27	.36	.28	.28	31	.33	34	.82	.87	1.0			
SA1	.18	.12	.35	.32	.01	.14	21	.34	.30	.29	16	.18	.17	.33	.24	.18	.18	.17	.17	.26	.23	.22	.26	26	.27	1.0		
SA2	.14	.15	.38	.35	.06	.18	.22	.29	.24	23	.16	.18	.13	.28	.19	.11	.16	.10	.12	.30	.27	.24	.30	.27	.28	.80	1.0	
SA3	.12	.16	.37	.35	.03	.16	.21	.29	23	.23	.19	.20	.18	27	.19	13	.15	.10	15	.27	25	.25	.29	.27	.26	.79	.89	1.0

APPENDIX
Continued

C: Electronics Customer Segment

	IQ1	IQ2	OP1	OP2	OR1	OR2	OR3	TI1	TI2	TI3	OA1	OA2	OA3	OQ1	OQ2	OQ3	OC1	OC2	OC3	OD1	OD2	OD3	PQ1	PQ2	PQ3	SA1	SA2	SA3
IQ1	1.0																											
IQ2	.81	1.0																										
OP1	.28	.33	1.0																									
OP2	.28	.38	.74	1.0																								
OR1	.24	.29	.31	.31	1.0																							
OR2	.21	.27	.28	.24	.55	1.0																						
OR3	.21	.30	.28	.26	.48	.73	1.0																					
TI1	.20	.23	.32	.27	.21	.28	.27	1.0																				
TI2	.20	.25	.30	.24	.26	.32	.31	.77	1.0																			
TI3	.16	.23	.23	.16	.23	.30	.30	.75	.82	1.0																		
OA1	.17	.18	.19	.17	.18	.21	.19	.18	.17	.16	1.0																	
OA2	.17	.16	.18	.16	.19	.20	.16	.16	.19	.17	.79	1.0																
OA3	.17	.19	.16	.14	.20	.25	.25	.16	.17	.16	.64	.64	1.0															
OQ1	.22	.27	.15	.16	.23	.33	.30	.22	.27	.25	.28	.24	.41	1.0														
OQ2	.27	.28	.21	.20	.21	.29	.29	.26	.23	.20	.34	.36	.38	.57	1.0													
OQ3	.20	.19	.12	.13	.12	.28	.24	.20	.19	.16	.40	.36	.39	.51	.67	1.0												
OC1	.22	.20	.20	.19	.19	.20	.22	.22	.19	.18	.62	.63	.57	.35	.40	.37	1.0											
OC2	.17	.18	.18	.16	.18	.22	.21	.21	.19	.19	.64	.61	.59	.32	.39	.40	.80	1.0										
OC3	.24	.23	.22	.17	.19	.22	.18	.19	.23	.22	.44	.48	.41	.38	.48	.51	.54	.54	1.0									
OD1	.15	.18	.19	.14	.23	.23	.22	.12	.21	.21	.37	.36	.37	.26	.32	.32	.39	.35	.30	1.0								
OD2	.15	.21	.19	.21	.27	.22	.21	.08	.17	.15	.38	.37	.34	.25	.31	.34	.38	.39	.34	.76	1.0							
OD3	.19	.21	.16	.17	.27	.24	.23	.15	.27	.26	.30	.27	.24	.26	.29	.31	.33	.34	.32	.58	.65	1.0						
PQ1	.16	.12	.25	.25	.27	.30	.25	.27	.26	.25	.13	.12	.13	.18	.20	.16	.21	.18	.21	.23	.23	.30	1.0					
PQ2	.13	.13	.24	.22	.27	.32	.28	.25	.26	.25	.16	.14	.17	.17	.18	.15	.20	.19	.21	.24	.26	.33	.86	1.0				
PQ3	.13	.10	.20	.22	.24	.30	.25	.19	.26	.25	.15	.13	.18	.21	.15	.14	.17	.15	.19	.22	.24	.31	.81	.85	1.0			
SA1	.16	.22	.37	.33	.15	.18	.16	.23	.23	.19	.20	.17	.16	.24	.21	.20	.20	.15	.20	.18	.29	.24	.24	.25	.22	1.0		
SA2	.14	.22	.38	.33	.15	.17	.16	.22	.23	.21	.19	.15	.14	.17	.20	.11	.23	.16	.20	.19	.27	.22	.26	.27	.24	.79	1.0	
SA3	.17	.25	.38	.35	.17	.18	.18	.25	.26	.23	.18	.17	.16	.20	.23	.16	.20	.15	.19	.22	.30	.25	.26	.27	.24	.79	.87	1.0

APPENDIX
Continued

D: Construction Customer Segment

	IQ1	IQ2	OP1	OP2	OR1	OR2	OR3	TI1	TI2	TI3	OA1	OA2	OA3	OQ1	OQ2	OQ3	OC1	OC2	OC3	OD1	OD2	OD3	PQ1	PQ2	PQ3	SA1	SA2	SA3
IQ1	1.0																											
IQ2	73	1.0																										
OP1	.51	.48	1.0																									
OP2	.42	.38	.76	1.0																								
OR1	.20	.23	.36	.36	1.0																							
OR2	.20	.23	.39	.40	.63	1.0																						
OR3	.26	22	.43	.47	51	.77	1.0																					
TI1	.21	.14	.37	.39	.31	.44	.38	1.0																				
TI2	.24	.20	.37	.37	.35	50	.43	.88	1.0																			
TI3	22	.17	.33	35	.33	.47	37	.89	.90	1.0																		
OA1	.34	.36	.45	.52	.44	.44	.39	.42	.40	.38	1.0																	
OA2	.28	30	.43	.48	.38	.42	.41	.39	.38	.35	.79	1.0																
OA3	.32	.34	.35	.44	.44	.41	.38	.31	.34	.32	.71	.68	1.0															
OQ1	.29	.37	34	.42	.40	.38	.30	31	.33	.29	.52	.45	.54	1 0														
OQ2	.25	.30	.45	.44	.45	.48	.42	.34	.32	.35	54	.52	.51	.56	1.0													
OQ3	.33	.36	45	.45	.48	45	.43	.30	.30	.31	.57	.50	.47	56	.67	1.0												
OC1	.38	.32	.46	.53	.40	.39	.38	.34	.38	.32	69	.60	.62	.50	.56	.63	1.0											
OC2	.35	.40	.40	48	.52	.49	.45	.30	.38	.34	.68	.58	.63	.53	.54	.63	.82	1.0										
OC3	.31	.29	.45	.50	.46	.47	.36	.32	.29	.35	.68	.62	.52	44	57	.65	.74	.68	1.0									
OD1	.30	.33	.38	.41	47	.48	.42	.31	.34	38	.51	.47	.50	.48	.50	.55	.49	.53	.47	1 0								
OD2	.24	.19	.35	.41	43	.46	.43	.34	.37	.40	.50	.54	.50	.48	.47	.50	.51	.46	.52	.78	1.0							
OD3	25	.19	.35	.38	.45	.45	.41	.43	.48	.47	.52	.49	.49	.55	.44	.49	53	.52	49	.67	.74	1.0						
PQ1	.25	.25	.38	.36	.31	35	.35	.37	.41	.41	33	.34	.31	.23	.34	.36	.42	.39	.39	.40	.38	.39	1.0					
PQ2	.21	.22	.36	.37	.34	.38	.34	.42	45	.45	.36	.38	.31	.25	.29	.35	.39	.38	.41	.43	.42	.42	.90	1.0				
PQ3	.23	26	.32	.31	.39	.45	.39	.38	.41	.42	.36	36	33	.24	.30	.38	.35	.37	.39	.44	.39	.44	.84	.85	1.0			
SA1	25	.22	.33	.23	.04	.03	.02	.19	.13	.13	.22	.23	.18	.19	.14	.08	.12	.09	.20	.19	.18	.20	.16	.16	.13	1.0		
SA2	.27	.23	.37	.27	.02	–.02	–.02	.17	.13	.12	.24	.24	.16	.16	.10	.08	19	.11	.14	.22	.20	.24	20	.18	.12	.76	1 0	
SA3	.24	.20	.33	.27	.01	.03	.00	.21	.19	.16	21	.21	.12	.19	07	.06	.13	.09	.16	.18	.19	.23	.14	.15	.11	.75	.86	1.0

Notes: PQ = personnel contact quality, OR = order release quantities, IQ = Information quality, OP = ordering procedures, OA = order accuracy, OC = order condition, OQ = order quality, OD = order discrepancy handling, TI = timeliness, and SA = satisfaction.

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Marketing Literature Review

MYRON LEONARD, Editor
Western Carolina University

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1. THE MARKETING ENVIRONMENT

1.1 Consumer Behavior

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The Old and the Restless. John Fetto, *American Demographics*, 22 (November 2000), pp. 10–11. [Survey, Target markets, Attitudes, Fears, Consumer expenditures, Leisure pursuits, Statistical data.] 1

Unmarried Bliss. Rebecca Gardyn, *American Demographics*, 22 (December 2000), pp 56–61. [Discussion, Market potentials, Age groups, Targeting problems, Assistance from gay professionals, Market strategy, Definition changes, Advertising, Examples.] 2

Head Trips. David J. Lipke, *American Demographics*, 22 (October 2000), pp. 38–40. [Consumer Profiles, Market segments, Mindbase (up and comers, young materialists, stressed by life, new traditionalists, family limited, detached introverts, renaissance elders, retired from life), Statistical data] 3

You Are What You Eat. David J Lipke, *American Demographics*, 22 (October 2000), pp. 42, 44–46. [Trends, Students, LifeSTYLING, Innovative dining options, Market segments (metro fusion, main streamers, fun express, time liners, star gazers, trendsetters), Preferences, Budgets, Examples] 4

Radio-Active. Joan Raymond, *American Demographics*, 22 (October 2000), pp. 28–30. [Studies, Preteens radio listening, Music, Market strategy, Advertising, Commercials, Effectiveness, Statistical data.] 5

Customer Satisfaction: A Meta-Analysis of the Empirical Evidence. David M. Szymanski and David H. Henard, *Journal of the Academy of Marketing Science*, 29 (Winter 2001), pp. 16–35. [Literature review, Model presentation, Antecedent and predictors, Affect, Expectations, Disconfirmation, Performance, Equity, Interactions, Statistical analysis, Implications.] 6

The Influence of Social Alliances with Sports Teams on Intentions to Purchase Corporate Sponsors' Products. Robert Madrigal, *Journal of Advertising*, 29 (Winter 2000), pp 13–24. [Literature review, Convenience sample, Adults attending college football game, Impacts, Identification with team, Intentions are perceived as group norm, Assessment, Implications.] 7

Sequential Choice in Group Settings: Taking the Road Less Traveled and Less Enjoyed. Dan Ariely and Jonathan Levav, *Journal of Consumer Research*, 27 (December 2000), pp. 279–90. [Three studies, Balancing goals, Individual and group, Choice outcomes, Trade-off process, Uniformity, Variety seeking, Personal satisfaction, Regret minimization, Statistical analysis.] 8

On the Concept of Intentional Social Action in Consumer Behavior. Richard P. Bagozzi, *Journal of Consumer Research*, 27 (December 2000), pp 388–96. [Literature review, Group actions, Integration of the model of goal-directed behavior with social identity/social categorization theories to explain social action, Assessment.] **9**

Descriptive Characteristics of Memory-Based Consideration Sets: Influence of Usage Occasion Frequency and Usage Location Familiarity. Kalpesh Kaushik Desai, *Journal of Consumer Research*, 27 (December 2000), pp. 309–23. [Literature review, Hypotheses; Three studies; Memory sets of more familiar occasions had lower stability, larger size, and marginally greater variety, sets of more familiar locations portrayed lower stability than those of less familiar locations; Statistical analysis; Implications.] **10**

Mood-Driven Distortion of Product Information. Margaret G Meloy, *Journal of Consumer Research*, 27 (December 2000), pp. 345–59. [Literature review; Hypotheses, Experiment; Information that seemed to preserve the good mood but disconfirmed the tentative preference had greater impact than did mood-disrupting, negative information about the leading brand; Statistical analysis.] **11**

Attributional Thoughts About Consumer Behavior. Bernard Weiner, *Journal of Consumer Research*, 27 (December 2000), pp. 382–87. [Attribution theory, Perceptions of causality along stability and controllability dimensions, Impacts, Product satisfaction, Judgments of responsibility and retributive actions, Assessment, Methodological recommendations.] **12**

Pursuing the Value-Conscious Consumer: Store Brands Versus National Brand Promotions. Kusum L. Ailawadi, Scott A Neslin, and Karen Gedenk, *Journal of Marketing*, 65 (January 2001), pp. 71–89. [Model presentation, Mall intercept survey, Attributes (economic/utilitarian benefits, hedonic/psychosocial benefits, costs, dependent behaviors), Roles (demographic and psychographic characteristics), Segmentation and cluster analyses, Implications.] **13**

Satisfaction, Repurchase Intent, and Repurchase Behavior: Investigating the Moderating Effect of Customer Characteristics. Vikas Mittal and Wagner A Kamakura, *Journal of Marketing Research*, 38 (February 2001), pp. 131–42 [Literature review, Model estimation, Data collection, Customers with different characteristics have different thresholds of behavior, Response bias, Functional form relating rated satisfaction to repurchase intent is different from the one relating it to repurchase behavior, Statistical analysis.] **14**

Entrenched Knowledge Structures and Consumer Response to New Products. C. Page Moreau, Donald R. Lehmann, and Arthur B. Markman, *Journal of Marketing Research*, 38 (February 2001), pp 14–29. [Literature review, Conceptual framework, Hypotheses, Two experiments, Preferences, Impacts, Attribute Mutability, Innovation continuity, Primary base domain knowledge, Comprehension, Net benefits, Statistical analysis, Managerial implications.] **15**

1.2 Legal, Political and Economic Issues

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Legal Considerations When Using Parodies in Advertising. Madeline Johnson and Ursula Spilger, *Journal of Advertising*, 29 (Winter 2000), pp. 77–86. [Discussion; Copyright, trade and service mark infringement claims; First Amendment claims; Court decisions; Assessment; Recommendations.] **16**

Industrial Recruitment and Economic Development: A Comparative Analysis of Competing Midwestern States Using Perceptual Mapping. Troy A Festervand, *Journal of Nonprofit and Public Sector Marketing*, 8 (No. 3, 2000), pp. 39–50. [Survey of industrial real estate professionals, Site selection, Impacts, Access to resources, Business environment, Quality of life, Assessment.] **17**

1.3 Ethics and Social Responsibility

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Franchising Opportunity: Corruption Indices as Measures of Risk and Economic Development in Emerging Markets. Paul G. Wilhelm and John C. Milewicz, *Journal of Business and Entrepreneurship*, 12 (July 2000), pp. 57–74. [Literature review, Country rankings, Corruption Perception Index, Overregulation, Black market, Real gross domestic product per capita, Assessment, Recommendations.] **18**

Ethics and Marketing Management: A Retrospective and Prospective Commentary. Lawrence B. Chonko and Shelby D. Hunt, *Journal of Business Research*, 50 (December 2000), pp. 235–44. [Discussion, Subsequent research related to 1985 article, Ethical problems and conflicts, Impacts, Top management actions, Corporate/industry codes of ethics, Situational factors, Projections.] **19**

All Apologies. Erin Strout, *Sales and Marketing Management*, 152 (November 2000), pp. 44–46, 48, 50, 52, 54. [Crisis management, Public relations strategy, Press conferences, Commercials, Apologizing to customers, Explanation about fixing the situation, Customer attitudes, Examples.] **20**

New Anti-fraud Initiative Focuses on E-Commerce Transaction Security. Michael Hartnett, *Stores*, 82 (December 2000), pp 64, 66 [Sharing of information, Newsletter, Seminars, Protection of credit card information, Data transmission in a secure environment, Keeping security software up-to-date, Contacting law enforcement when crime is suspected, Consumer education, Examples.] **21**

2. MARKETING FUNCTIONS

2.1 Management, Planning, and Strategy

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Making a Good Team Great. Gil Arzola, *Across the Board*, 37 (October 2000), pp 44–47. [Discussion, Factors, Every player feels valued, Allow them to take chances, They know what to expect and have tools to succeed, Assessment.] **22**

Strategic Investment Decision Appraisal Techniques: The Old and the New. Ralph W. Adler, *Business Horizons*, 43 (November/December 2000), pp 15–22. [Discussion, Traditional (too-narrow perspective), Alternatives (modifying technical shortcomings and expanding narrow focus, reliance on analytical frameworks), Assessment.] **23**

The Fine Art of Friendly Acquisition. Robert J. Aiello and Michael D. Watkins, *Harvard Business Review*, 78 (November/December 2000), pp 100–107. [Discussion, Stages, Screening potential deals, Reaching initial agreement, Conducting due diligence, Setting final terms, Achieving closure, Examples.] **24**

What Is the Stuff of an Entrepreneur? Jim Hatch and Jeffrey Zweig, *Ivy Business Journal (Canada)*, 65 (November/December 2000), pp. 68–72. [Discussion, Character traits, Risk tolerance, Desire for control, Desire to succeed, Perseverance, Decisiveness, Assessment.] **25**

Attributes of High-Performance Research Organizations. George A. Neufeld, Peter A. Simeoni, and Marilyn A. Taylor, *Ivy Business Journal (Canada)*, 65 (November/December 2000), pp. 55–61. [Developing attributes, Key perspectives on performance (people, leadership, research management, organizational performance), Examples, Canada.] 26

Factors Affecting the Use of Information in the Evaluation of Marketing Communications Productivity. George S. Low and Jakki J Mohr, *Journal of the Academy of Marketing Science*, 29 (Winter 2001), pp. 70–88. [Literature review, Conceptual framework, Hypotheses, Survey of marketing executives, Impacts, Information quality, Organization formalization, Task complexity, Market turbulence, Rationality of decision style, Group involvement, Statistical analysis, Implications.] 27

Reducing Marketing's Conflict with Other Functions: The Differential Effects of Integrating Mechanisms. Elliot Maltz and Ajay K. Kohli, *Journal of the Academy of Marketing Science*, 28 (Fall 2000), pp. 479–92. [Literature review, Hypotheses, Survey of managers, Impacts, Multifunctional training, Cross-functional team use, Compensation variety, Formalization, Social orientation, Spatial proximity, Internal volatility, Statistical analysis, Implications] 28

Marketing Implementation in Smaller Organizations: Definition, Framework, and Propositional Inventory. Hemant C Sashittal and Avan R. Jassawalla, *Journal of the Academy of Marketing Science*, 29 (Winter 2001), pp. 50–69. [Literature review, Conceptual framework, Propositions, Interviews with managers (industrial), Planning–implementation interface, Impacts, Market orientation, Rate of growth, Strategic effectiveness.] 29

New Venture Creation Model. JoAnn C. Carland and James W. Carland, *Journal of Business and Entrepreneurship*, 12 (October 2000), pp. 29–47. [Literature review, Model comparisons, Entrepreneurial psyche, Factors, Cognition, Knowledge, Creativity, Intuition, Entrepreneurial vision, Interactive analysis, Feedback and learning, Refined vision, New venture creation.] 30

Strategy and Performance in the Entrepreneurial Computer Software Industry. John A. Parnell, Shawn Carraher, and Randy Odom, *Journal of Business and Entrepreneurship*, 12 (October 2000), pp. 49–66 [Literature review, Propositions, Survey, Categories, Prospectors, Differentiators, Defenders, Low-cost leaders, Reactors, Growth and profitability levels, Statistical analysis] 31

Seven Steps to Build a Successful Collaborative Forecasting Process. Deanna Diehn, *Journal of Business Forecasting*, 19 (Winter 2000/2001), pp. 23, 28–29. [Identify champions for the cause, Involvement of key leaders, Highly functional staff members, Give forecasting high visibility, Publish results, Process improvement, Network with other organizations.] 32

Demand Management Versus Forecasting. Larry Lapide, *Journal of Business Forecasting*, 19 (Winter 2000/2001), pp 17–18. [Proactive demand management balances supply with demand, Software application functionality (forecast consumption and breakdowns, yield management, customer versus internal orders, constrained versus unconstrained real-time demand), Assessment.] 33

The Human Aspects of Collaborative Forecasting. Sean Reese, *Journal of Business Forecasting*, 19 (Winter 2000/2001), pp. 3–9. [Discussion, Human aspects, Cooperation from the sales organization, Accuracy incentives, Building relationships, Hurdles to overcome, Signals, Pressures to over- and underforecast, Production and financial planning, Case study] 34

Journal of Business Research, 50 (November 2000), pp. 143–231. [Eleven articles on marketing/finance interface, Divergent and complementary views, Advertising expenditures, Impacts, Earnings and market values, Shareholder returns, Ad agency terminations and reviews, Promotional expenditures, Market competition and thrift behavior, Culture, Capital structure and performance, Wealth effects, Green marketing strategies, Long-term debt, Product pricing policy, Profitability and marketing channel structure, Bankruptcy] 35

Developing Your Company's New E-Business. Ava S. Butler, *Journal of Business Strategy*, 21 (November/December 2000), pp 38–42 [Change management, Align and educate leadership and management teams, Choosing project leaders and team members, Communication, Budgets, Document lessons learned, Organizational structure, Examples.] 36

Strategy: The End of the Endgame? Phillip Evans, *Journal of Business Strategy*, 21 (November/December 2000), pp. 12–16. [Discussion, Impacts, Internet, Strategic Planning, Chaos theory, Rules of thumb, Connectivity, Strategy as direction, Examples.]37

Managing Customer Knowledge. Eric Lesser, David Mundel, and Charles Wiecha, *Journal of Business Strategy*, 21 (November/December 2000), pp. 34–37. [Customer data gathering, Problems, Advantages, Improving availability and use, Using a collaborative virtual workspace, Customer knowledge communities, Enterprise leadership, Examples.] 38

Hiring an E-Team. Dale Neef, *Journal of Business Strategy*, 21 (November/December 2000), pp. 17–21. [Discussion, Enterprise resource planning, E-business skill set, Organizational change, Impacts, Consultants, Success, Guidelines] 39

Sustainable Competitive Advantage? Richard W. Oliver, *Journal of Business Strategy*, 21 (November/December 2000), pp. 7–9 [Discussion, Impacts, Corporate learning, Global shortages, Well-trained talent, Distance learning, Compensation, Motivation, Examples.] 40

Where Technology and Knowledge Meet. Christy A. Silver, *Journal of Business Strategy*, 21 (November/December 2000), pp. 28–33 [Knowledge management, Multidependent discipline, Top management support, Functional attributes, Emerging standards, Component/modular-based offerings, Market convergence, Service providers, Examples.] 41

Asymmetric Competition in Choice and the Leveraging of Competitive Disadvantages. Timothy B. Heath and others, *Journal of Consumer Research*, 27 (December 2000), pp 291–308. [Literature review, Experiment, Asymmetric price competition favoring higher-quality competitors and asymmetric quality competition favoring lower-quality competitors, Impacts, Improving competitive advantages and disadvantages, Statistical analysis, Implications.] 42

Strategic Interdependence in Organizations: Deconglomeration and Marketing Strategy. P. Rajan Varadarajan, Satish Jayachandran, and J. Chris White, *Journal of Marketing*, 65 (January 2001), pp. 15–28. [Literature review, Model presentation, Drivers and outcomes of deconglomeration, Propositions, Construct operationalization issues, Effects, Competitive behavior, Customer orientation, New product introduction, Brand advertising, Corporate culture, Locus of decision making for marketing strategy, Assessment.] 43

Truth or Consequences: An Analysis of Vaporware and New Product Announcements. Barry L. Bayus, Sanjay Jain, and Ambar G. Rao, *Journal of Marketing Research*, 38 (February 2001), pp. 3–13. [Literature review, Game-theoretic model, Propositions, Data collection, Preannouncement and introduction timing decisions, Accuracy, Impacts, Product development costs, Assessment, Implications, Software industry.] 44

"Pie Sharing" in Complex Collaboration Contexts. Sandy D. Jap, *Journal of Marketing Research*, 38 (February 2001), pp. 86–99. [Literature review; Model presentation; Hypotheses; Survey of R&D managers, scientists, and engineers; Variables; Organizational and resource conditions; Sharing principles, Relationship quality; Outcomes, Statistical analysis] 45

Signaling Strategies in Competitive Interaction: Building Reputations and Hiding the Truth. Jaideep Prabhu and David W. Stewart, *Journal of Marketing Research*, 38 (February 2001), pp. 62–73. [Literature review, Conceptual Framework, Hypotheses, Two experiments, Incumbent's focus and strength of signals, Use of bluffs and cost of information driving signals, How firms should signal to achieve strategic objectives, Statistical analysis.] **46**

Marketing's Influence Tactics in New Product Development: A Study of High Technology Firms in China. Kwaku Atuahene-Gima and Haiyang Li, *Journal of Product Innovation Management*, 17 (November 2000), pp. 451–70 [Literature review, Data collection, Variables, Persistent pressure, Information exchange, Recommendation, Legalistic plea, Request, Upward appeal, Coalition formation, Interdepartmental conflict, Self-perceived influence, Statistical analysis, Managerial implications.] **47**

Making Innovation Happen in Organizations: Individual Creativity Mechanisms, Organizational Creativity Mechanisms or Both? Sundar Bharadwaj and Anil Menon, *Journal of Product Innovation Management*, 17 (November 2000), pp. 424–34. [Literature review, Hypotheses, Survey, Variables, Innovation performance, Individual and organizational learning efforts, R&D intensity, Organizational slack, Importance of innovation, Size, Experience, Statistical analysis, Implications.] **48**

Individual Differences, Environmental Scanning, Innovation Framing, and Champion Behavior: Key Predictors of Project Performance. Jane M. Howell and Christine M Shea, *Journal of Product Innovation Management*, 18 (January 2001), pp. 15–27. [Literature review; Hypotheses; Survey of champions, innovation team members, and division managers, In scanning the environment for new ideas, the most effective source of information is the champion's personal network of people inside and outside the organization.] **49**

Perspectives on Roadmaps: How Organizations Talk About the Future. Thomas A. Kappel, *Journal of Product Innovation Management*, 18 (January 2001), pp 39–50. [Discussion, Techniques, Forecasts of what is possible or likely to happen, Plans that articulate a course of action, Align organizations in times of predictable change, Originate as responses to perceived threats, Success, Guidelines.] **50**

Journal of Small Business Management, 29 (January 2001), pp. 3–94 [Seven articles on family business; Business growth, Human resources, Cross-generational conflict, Performance, risk, and value, Strategic goals and practices, Business planning; Small communities; International aspects.] **51**

An Analysis of Entrepreneurial Environment and Enterprise Development in Hungary. Georgine Fogel, *Journal of Small Business Management*, 29 (January 2001), pp. 103–109. [Discussion, Conceptual framework, Survey of small business owners and operators, Attitudes, Financial and nonfinancial assistance, Entrepreneurial and business skills, Socioeconomic conditions, Policies and procedures for entrepreneurial activities, Assessment.] **52**

Getting Professionals to Plan: Pressures, Obstacles, and Tactical Responses. Lloyd C. Harris, *Long Range Planning (UK)*, 33 (December 2000), pp. 849–77. [Literature review, Personal interviews, Pressures (increased competition, structural changes, customer expectations, fear of failure, planning activists), Obstacles (unnecessary activity, professionalism conflict, lack of expertise, resistance by seniors), Assessment, Theoretical and managerial implications, UK.] **53**

An Empirical Study of the Alignment Between Manufacturing and Marketing Strategies. K.A. Weir, A.K Kochhar, S.A. LeBeau, and D G. Edgeley, *Long Range Planning (UK)*, 33 (December 2000), pp. 831–48. [Discussion, Surveys, Formal business planning practices, Written function strategies by annual turnover and company type, Functional and strategic integration, Assessment, UK.] **54**

Marketing to Small Businesses. Michelle Cioci, *Sales and Marketing Management*, 152 (December 2000), pp 94–96, 98, 100 [Discussion, Market strategy, Focusing on the relationship, Personal knowledge of client and business, Impact of time, Establishing credibility in the community, Providing education, Advertising campaigns, Examples.] **55**

Standing Tall. Elana Harris, *Sales and Marketing Management*, 152 (December 2000), pp. 76–78, 80, 82, 84 [Turnaround management, Management styles, Customer relations, Community involvement, Market segments, Online shopping, Value, Examples, Automobile industry, Canada.] **56**

Is Your Network Secure? Susan Reda, *Stores*, 82 (December 2000), pp. 42–44, 46. [Protection of computer systems, Market pressures, Business risks, Chief security officer, Hacker problems, Content control, Examples.] **57**

2.2 Retailing

See also 21, 57, 63, 68, 69, 89, 90, 91, 92, 105, 184, 189, 197

Centralization vs. Decentralization in a Multi-unit Organization: A Computational Model of a Retail Chain as a Multi-agent Adaptive System. Myong-Hun Chang and Joseph E. Harrington Jr., *Management Science*, 46 (November 2000), pp. 1427–40 [Organizational structure, Model presentation, Stable and fluctuating markets, Convergence to local optima, Perpetual innovation, Assessment.] **58**

Retailing Without Wires. Susan Reda, *Stores*, 82 (November 2000), pp 32–34, 36, 38 [Mobile commerce, Retailer uncertainty, Shopping behavior, Merchant networks, Targeted messages, Brand names, Examples.] **59**

2.3 Channels of Distribution

See also 18, 45, 73, 78, 79, 81, 85, 86, 90, 91, 92, 95, 108, 126, 133, 151, 158, 159, 167, 185, 204

Beyond the Exchange: The Future of B2B. Richard Wise and David Morrison, *Harvard Business Review*, 78 (November/December 2000), pp 86–96. [Discussion, Impacts, Internet, New models (mega-exchange, specialist originator, e-speculator, solution provider, sell-side asset exchange), Examples] **60**

The Role of Interpersonal Liking in Building Trust in Long-Term Channel Relationships. Carolyn Y. Nicholson, Larry D Compeau, and Rajesh Sethi, *Journal of the Academy of Marketing Science*, 29 (Winter 2001), pp. 3–15. [Model testing; Hypotheses; Survey of wholesale franchisees; When the relationship between the buyer and the sales rep is new, liking partially mediates the effect of similarity of business values and fully mediates the influence of frequency of personal interaction on trust, Liking becomes more important in trust development as the relationship grows.] **61**

The Organizational Determinants of Master International Franchising. Ilan Alon, *Journal of Business and Entrepreneurship*, 12 (July 2000), pp 1–18. [Literature review, Propositions; Resource-, knowledge-, and strategy-based explanations; Modest resources, internationally unknown brand names, little experience in international markets, and know-how that is transferable; Assessment.] **62**

Plural Form Chains and Retail Life Cycle: An Exploratory Investigation of Hotel Franchised/Company-Owned Systems in France. Gerard Cliquet, *Journal of Business and Entrepreneurship*, 12 (July 2000), pp 75–98. [Literature review, Bradach model, Interviews with hotel executives, Territory coverage, Management evolution, Assessment.] **63**

An Empirical Investigation of the Internal Political Economy of Food Vertical Marketing. Gilles Corriveau and Robert D. Tamilia, *Journal of Business and Entrepreneurship*, 12 (July 2000), pp. 33–55. [Literature review, Model presentation, Hypotheses, Survey, System (administered, contractual, corporate), Impacts, Centralization, Formalization, Goal compatibility, Domain consensus, Evaluation of accomplishment, Norms of exchange, Statistical analysis, Implications, Canada.] 64

Are Some Franchisees More Entrepreneurial Than Others? A Conceptual Perspective on Multi-unit Franchisees. Marko Grunhagen and Robert A. Mittelstaedt, *Journal of Business and Entrepreneurship*, 12 (October 2000), pp. 15–28. [Literature review, Philosophical distinction between area development and sequential multiunit franchising, Impacts, Decision processes, Recommendations.] 65

Buyer–Supplier Relationships and Customer Firm Costs. Joseph P. Cannon and Christian Homburg, *Journal of Marketing*, 65 (January 2001), pp. 29–43. [Literature review, Model development and testing, Hypotheses, Data collection, Buying organizations, Impacts, Increased communication frequency, Different forms of supplier accommodation, Product quality, Geographic closeness of supplier's facilities, Value, Implications, US, Germany.] 66

Examining the Impact of Destructive Acts in Marketing Channel Relationships. Jonathan D. Hibbard, Nirmalya Kumar, and Louis W. Stern, *Journal of Marketing Research*, 38 (February 2001), pp. 45–61. [Literature review, Model presentation, Hypotheses, Survey of focal supplier and independent dealers, Effects, Cognitions about the destructive act, Relationship characteristics, Responses, Relational consequences, Statistical analysis, Managerial implications.] 67

Determinants and Outcomes of Plan Objectivity and Implementation in Category Management Relationships. Thomas W. Gruen and Reshma H. Shah, *Journal of Retailing*, 76 (Winter 2000), pp. 483–510. [Literature review, Model presentation, Hypotheses, Survey of category managers, Measures, Opportunistic behavior, Brand management/sales conflict, Customer business development team resource commitment, Preplanning agreement, Retailer "system trust," Statistical analysis.] 68

Is Channel Coordination All It Is Cracked Up to Be? Charles A. Ingene and Mark E. Parry, *Journal of Retailing*, 76 (Winter 2000), pp. 511–47. [Theoretical discussion; Model presentation, Stackelberg two-part tariff; Impacts; Maximizing manufacturer profit; Optimal policy is dependent on retailers' fixed costs, relative size, and degree of interretailer competition; Assessment.] 69

Efficient Supply Contacts for Fashion Goods with Forecast Updating and Two Production Modes. Karen L. Donohue, *Management Science*, 46 (November 2000), pp. 1397–411. [Discussion; Two-stage newsvendor model; Propositions, Inexpensive, but requiring long lead time; Expensive, but offers quick turnaround; Impacts; Degree of demand forecast improvement between periods, Manufacturer's access to forecast information; Pareto analysis.] 70

How Effective Are Your Measurement Systems? Jim Morgan, *Purchasing*, 129 (December 8, 2000), pp. 26–28. [Survey of purchasing professionals; Monitoring supply, sourcing, and buying performance; Needed changes; Top management support, Performance/conformance argument; New or revised metrics; Examples.] 71

Learn from Past Mistakes. Neil Rackham, *Sales and Marketing Management*, 152 (December 2000), pp. 38–40. [Discussion, Sales force automation; Problems, Customer relationship management; Software packages; Put strategy first, with less emphasis on systems and software; Integrate across channels, Focus on clear, but limited, objectives, Assessment.] 72

2.4 Electronic Marketing

See also 21, 56, 59, 105, 123, 143, 184, 191, 201, 204

Where the Interaction Is. Ajit Kambil and Erik Eselius, *Across the Board*, 37 (November/December 2000), pp. 36–40. [Discussion, Customer relations, Value innovations, E-commerce, Interaction types (buying, user, selling, customer co-creation, integration), Examples.] 73

Why Won't You Come Back? Hassan Fattah, *American Demographics*, 22 (November 2000), pp. 16, 19–20. [Internet auctions, Dissatisfaction decline, New customers, Retention, Impacts, Descriptors, Value, Assessment.] 74

That's Entertainment. Kemba Johnson, *American Demographics*, 22 (November 2000), pp. 34–36, 38. [E-commerce companies, New technology, Broadband Web access, Market strategy, Streaming media, Examples.] 75

Every Day's a Holiday. Alison Stein Wellner, *American Demographics*, 22 (December 2000), pp. 62–65. [Market segments, Ethnic, Consumer expenditures, Internet access, E-commerce allows for diversity in holiday celebrations, Examples.] 76

The E-volving Organization. Karl Moore, *Ivy Business Journal (Canada)*, 65 (November/December 2000), pp. 25–28. [Discussion, Models, E-culture, Characteristics (speed, dynamic strategy responsiveness, global reach, e-initiatives, internal collaboration, integrates with partners), Ways of organizing, Examples.] 77

Finding Your Way Through the Jungle. David Tait and Larry Guevel, *Ivy Business Journal (Canada)*, 65 (November/December 2000), pp. 38–41. [Business growth, Interconnected online trading networks, Advantages, Disadvantages, Participation adjustments, Governmental agencies, Examples.] 78

Buyers Want More Web Capability from Distributors. *Purchasing*, 129 (November 16, 2000), pp. 128, 130–31. [Discussion, Extranets, Interactive Web-based tools, Cost savings, Customized capabilities, Online negotiation, Exchanges, Examples.] 79

Brand-Name Recognition Problem Raises Its Head. Brian Milligan, *Purchasing*, 129 (November 2, 2000), pp. 85–86, 88–89. [Discussion, Online confusion, Transportation exchanges, Many sites adopt the words "freight" or "ship" in their names, Making names more recognizable, Examples.] 80

MRO Distributors Embrace E-Commerce. Jianfeng Pei, *Purchasing*, 129 (November 2, 2000), pp. 79–80. [Web sites, Online sales, Convenience, Speed, Sourcing, Competition, Mergers and consolidation, Impacts, Information flows, Customer relations, Service offerings, Examples.] 81

E-Commerce Is Busting Out All Over. Tom Stundza, *Purchasing*, 129 (October 5, 2000), pp. 48B15–34. [Trends, Buy- and sell-side portals, Metals marketplace, Sales, Costs, Diverse landscape, Auctions, International activity, Exchanges, Competition, Examples.] 82

Ride the Wave. Ginger Conlon, *Sales and Marketing Management*, 152 (December 2000), pp. 67–70, 72, 74. [Survey of companies, Attitudes, E-commerce, Impacts, Area of business, Importance, Online customer service, Projected use of technology, Customer extranets, Future sources of online sales, Statistical data.] 83

A Brand by Any Other Name. Rochelle Garner, *Sales and Marketing Management*, 152 (December 2000), pp. 102–104, 106–108. [Online brand equity, Web technology, Business-to-business ventures, Target markets, Messages, Examples, Guidelines.] 84

Global Commerce Initiative Aids Internet Trading Through International Standards. Susan Reda, *Stores*, 82 (November 2000), pp. 52, 54, 56. [Discussion, Business-to-business, Open and voluntary standards, Communication of information, Protocol (item synchronization, dispatch, purchase order, information about sender), Examples] 85

Franchisers Step Up Efforts to Protect On-line Brand Image. Tony Seideman, *Stores*, 82 (November 2000), pp 91–92, 94, 96. [Opportunity for creativity, Web content, Coherence, Flexibility and control, Brand essentials, Success, Guidelines.] 86

2.5 Physical Distribution

See also 33, 68, 80, 142, 143, 172, 190

From Garbage to Goods: Successful Remanufacturing Systems and Skills. Geraldo Ferrer and D. Clay Whybark, *Business Horizons*, 43 (November/December 2000), pp. 55–64. [Discussion, Drivers (legislation, prolonging economic life, strategic opportunity), Logistics (transportation and storage, handling and packaging, sorting and disassembly), Reassembly (inventory control and scheduling forward logistics), Marketing, Assessment.] 87

Beyond Marketing Myopia: The Service of Small Railroads. Michael Landry and John Ozment, *Business Horizons*, 43 (November/December 2000), pp. 36–40. [Regional and shortline companies, Problems, Branch line trackage and passenger trains, Government solutions (Amtrak, Conrail, ease of branch line abandonment, shortline spinoffs, eventual railroad deregulation), Assessment.] 88

Control Your Inventory in a World of Lean Retailing. Frederick H. Abernathy, John T. Dunlop, Janice H. Hammond, and David Weil, *Harvard Business Review*, 78 (November/December 2000), pp. 169–72, 174, 176. [Discussion, Stockkeeping unit level analysis, Manufacturers, Maximize profits and reduce inventory risk, Sourcing, Examples.] 89

A Decision Support System for Vendor Managed Inventory. Dale D. Achabal, Shelby H. McIntyre, Stephen A. Smith, and Kirthi Kalyanam, *Journal of Retailing*, 76 (Winter 2000), pp. 430–54. [Literature review, Model development, Implementation, Aided vendor and retailers arrive at jointly agreed-on customer service level and inventory turnover targets, Benefits assessment, Case study, Apparel manufacturing industry.] 90

The Nature of Interfirm Partnering in Supply Chain Management. John T. Mentzer, Soonhong Min, and Zach G Zacharia, *Journal of Retailing*, 76 (Winter 2000), pp. 549–68 [Literature review, Propositions; Impacts, Environmental pressures, antecedents, orientation, implementation, and consequences of strategic and operational partnering for vertical relationships within retail supply chains] 91

The Effectiveness of Automatic Inventory Replenishment in Supply Chain Operations: Antecedents and Outcomes. Matthew B. Myers, Patricia J. Daugherty, and Chad W. Autry, *Journal of Retailing*, 76 (Winter 2000), pp. 455–81. [Literature review, Hypotheses, Survey of retailers and manufacturers, Impacts, Factors (transaction, specific, strategic, organizational), Performance, Assessment.] 92

Information and Incentive Effects of Inventory in JIT Production. Michael Alles, Amin Amershi, Srikant Datar, and Ratna Sarkar, *Management Science*, 46 (December 2000), pp. 1528–44. [Literature review, Model presentation, Hypotheses, Survey of firms, Reduced inventory levels, Impacts, Quality, Costs, Better-trained workers, Process reliability, Assessment.] 93

Inventory Management of Remanufacturable Products. L. Beril Toktay, Lawrence M. Wein, and Stefanos A. Zenios, *Management Science*, 46 (November 2000), pp. 1412–26. [Closed queuing networks, Production control, Simulation model, Sensitivity analysis, Policies (clairvoyant, trackable, untrackable, observable), Impacts, Information structure, Procurement delay, Demand rate, Length of product life cycle, Assessment.] 94

JIT Works, But Still Has Bugs. Dan Gottlieb, *Purchasing*, 129 (December 22, 2000), pp. 22–23, 30, 34, 36. [Survey of purchasing managers, Benefits, Efficiency, Problems, Supply chain coordination and cooperation, Commitment, Transportation, Examples.] 95

Buyers Seek Expanded Service. Brian Milligan, *Purchasing*, 129 (October 5, 2000), pp 61–62, 64. [Discussion, Small-package express, Freight forwarders, Inventory control, International activity, Need for more supply chain solutions, Internet, Third-party logistics, Examples.] 96

LTL Industry Faces Rate, Hours-of-Service Challenges. Brian Milligan, *Purchasing*, 129 (November 16, 2000), pp. 179–80, 182. [Less-than-truckload industry, Rate increases, Carrier support, Consolidation, Driver shortages, Reduced hours of service, Highway safety, Examples] 97

2.6 Pricing

See also 42, 70, 119, 187, 189, 204

Discovering Hidden Pricing Power. Donald V. Potter, *Business Horizons*, 43 (November/December 2000), pp. 41–48 [Discussion, Changing structure of price, Building more subtlety into the pricing process, Exploiting pricing patterns common in other markets where price increases are difficult, Examples.] 98

The Impact of Research Design on Consumer Price Recall Accuracy: An Integrative Review. Hooman Estelami and Donald R. Lehmann, *Journal of the Academy of Marketing Science*, 29 (Winter 2001), pp 36–49 [Discussion, Hypotheses, Meta-analysis, Impacts, Product category, Participation incentives, Task size, Response format, Gender, Income, Statistical analysis.] 99

Focusing on the Forgone: How Value Can Appear So Different to Buyers and Sellers. Ziv Carmon and Dan Ariely, *Journal of Consumer Research*, 27 (December 2000), pp. 360–70. [Literature review, Four studies, Impacts, Salient reference prices, Processing benefits, Alternative uses of money, Statistical analysis.] 100

On the Optimality of Delegating Pricing Authority to the Sales Force. Kissan Joseph, *Journal of Marketing*, 65 (January 2001), pp. 62–70. [Literature review, Model development, Propositions, Full and limited authority, Profits, Impacts, Prospecting strategy, Information structure, Commission rate, Assessment, Managerial implications] 101

Transaction Decoupling: How Price Bundling Affects the Decision to Consume. Dilip Soman and John T. Gourville, *Journal of Marketing Research*, 38 (February 2001), pp. 30–44. [Literature review; Hypotheses; Four studies; Price bundling leads to a disassociation of transaction costs and benefits, thereby reducing attention to sunk costs and decreasing a consumer's likelihood of consuming a paid-for service; Statistical analysis; Implications.] 102

2.7 Product

See also 11, 13, 15, 31, 42, 44, 47, 48, 49, 56, 80, 84, 86, 89, 120, 125, 130, 143, 156, 162, 163, 205

The Nation as Brand. Simon Anholt, *Across the Board*, 37 (November/December 2000), pp. 22–27. [Discussion, Impacts, Country of origin, High profile brands, Stereotypes, Third-World brands, Wealth redistribution, Examples.] 103

Pledge of Allegiance. David J. Lipke, *American Demographics*, 22 (November 2000), pp. 40–42. [Trends, Brand loyalty, Age groups, Impacts, Changes in life stages, Price, Customization, Examples.] 104

E-tailing—For All Products? Zhan G. Li and Nurit Gery, *Business Horizons*, 43 (November/December 2000), pp. 49–64. [Purchasing patterns, Online versus in-store shopping, Suitability of product types (convenience, shopping, specialty), Assessment] 105

Generating New Product Ideas: An Initial Investigation of the Role of Market Information and Organizational Characteristics. Lisa C. Troy, David M Szymanski, and P. Rajan Varadarajan, *Journal of the Academy of Marketing Science*, 29 (Winter 2001), pp. 89–101. [Literature review, Model development and testing, Hypotheses, Survey of firms, Impacts, Amount of market information, Open-mindedness, Openness of communication, Formalization, Centralization, Specialization, Statistical analysis, Managerial implications.] **106**

Communication Strategies for Brand Extensions: Enhancing Perceived Fit by Establishing Explanatory Links. Sheri Bridges, Kevin Lane Keller, and Sanjay Sood, *Journal of Advertising*, 29 (Winter 2000), pp. 1–11. [Literature review, Pilot study, Experiment, Impacts, Dominant parent brand associations, Attribute and nonattribute-based, Brand-to-extension relationship, Salience and relevance, Statistical analysis.] **107**

Co-branding Approaches in the Franchised Food Service Industry. Joyce A. Young, Robert D. Green, and Audhesh K. Paswan, *Journal of Business and Entrepreneurship*, 12 (July 2000), pp. 19–31. [Discussion, Major elements, Advantages and disadvantages, Impacts, Resources, Expertise, Collaboration issues (strategic, operational, purchasing, product, price, promotional, store design), Assessment.] **108**

The Effects of Extensions on the Family Brand Name: An Accessibility–Diagnosticity Perspective. *Journal of Consumer Research*, 27 (December 2000), pp. 371–81. [Literature review, Hypotheses, Two studies, Impacts, Valence of extension information, Extension category, Close versus far extensions, Dilution, Enhancement, Statistical analysis.] **109**

An Empirical Analysis of Firms' Product Line Decisions. William P Putsis Jr. and Barry L. Bayus, *Journal of Marketing Research*, 38 (February 2001), pp 110–18. [Literature review, Model presentation, Mathematical equations, Direction and magnitude of product line change, Strategic factors, Market growth, Marketwide new product activity, Industry concentration, Market share, Relative technological age of the firm's product line, Firm age, Statistical analysis.] **110**

Cross-Functional Product Development Teams, Creativity, and the Innovativeness of New Consumer Products. Rajesh Sethi, Daniel C. Smith, and C Whan Park, *Journal of Marketing Research*, 38 (February 2001), pp 73–85 [Literature review, Model presentation, Hypotheses, Measures, Team characteristics, Contextual influences, Statistical analysis.] **111**

How Integrating Industrial Design in the Product Development Process Impacts on Company Performance. Gerda Gemser and Mark A.A.M Leenders, *Journal of Product Innovation Management*, 18 (January 2001), pp. 28–38. [Literature review, Hypotheses; Personal interviews, The extent to which firms integrate industrial design in new product development projects has a positive influence on company performance, in particular when the strategy of investing in industrial design is relatively new for the industry involved.] **112**

Launching New Product Features: A Multiple Case Examination. Jurg M. Tholke, Erik Jan Hultink, and Henry S.J. Robben, *Journal of Product Innovation Management*, 18 (January 2001), pp. 3–14. [Literature review, Interviews with managers, Feature launch strategies (dictatorship, pioneering, establishing, following), Decisions (feature life cycle stage, core technology, focus on feature or product, differentiation practices, diffusion in product line, make or buy), Assessment, Implications, The Netherlands.] **113**

Perspective—Riding the Wind: Managing New Product Development in an Age of Change. Chuck Tomkovick and Christopher Miller, *Journal of Product Innovation Management*, 17 (November 2000), pp 413–23 [Literature review, Themes, New product development importance, Building blocks for success, Value of innovation speed, Continuous quality improvement, Product elimination, Fun and optimism, Delivering on promises made, Assessment.] **114**

Cross-Functional Influence in New Product Development: An Exploratory Study of Marketing and R&D Perspectives. Kwaku Atuahene-Gima and Felicitas Evangelista, *Management Science*, 46 (October 2000), pp. 1269–84. [Literature review; Model presentation; Hypotheses; Survey of marketing managers; High technology firms; Unlike R&D's participation as perceived by marketing, marketing's participation as perceived by R&D affects new product performance only when its influence is high; Implications] **115**

Competing with New Product Technologies: A Process Model of Strategy. Shobha S. Das and Andrew H. Van de Ven, *Management Science*, 46 (October 2000), pp. 1300–16. [Discussion, Hypotheses, Longitudinal study, Nature of market (dispersed, concentrated), Technology (evolved, novel), Assessment.] **116**

2.8 Sales Promotion

See also 13

The Buzz on Buzz. Renee Dye, *Harvard Business Review*, 78 (November/December 2000), pp. 139–46. [Word-of-mouth promotion, Myths, Only outrageous or edgy products are buzz-worthy, Buzz just happens, Best buzz-starters are best customers, Act first and fast, Media and advertising are needed to create buzz, Examples.] **117**

Same Time Next Year: Buyer Trade Show Motives. Susan H Godar and Patricia J. O'Connor, *Industrial Marketing Management*, 30 (January 2001), pp. 77–86. [Buying center members, Buyers are segmented into current, potential, and nonbuyers, Short- and long-term motives are assigned to each category; Assessment; Practical implications] **118**

Market Response to a Major Policy Change in the Marketing Mix: Learning from Procter and Gamble's Value Pricing Strategy. Kusum L. Ailawadi, Donald R Lehmann, and Scott A. Neslin, *Journal of Marketing*, 65 (January 2001), pp. 44–61 [Theoretical discussion, Model estimation, Data collection (1990–1996), Major cuts in deals and coupons and substantial increases in advertising, Impacts, Market penetration, Customer retention, Competitor response, Market shares, Statistical analysis, Implications.] **119**

2.9 Advertising

See also 5, 7, 16, 55, 75, 86, 107, 117, 119, 148, 163

Advertising-on-Demand. John Fetto, *American Demographics*, 22 (December 2000), pp. 35–36, 38. [New technologies, Personal video recorders, Market strategy, Length of commercials, Product placement on popular television shows, Information to better target consumers, "Scannable" bar codes, Examples.] **120**

Moving Targets. Rebecca Gardyn, *American Demographics*, 22 (December 2000), pp 32, 35–36. [Outdoor advertising, Target markets, Travel frequency, Consumer expenditures, Market strategy, Statistical data.] **121**

The Center of Attention. Ilana Polyak, *American Demographics*, 22 (November 2000), pp. 30–32. [Older consumers, Discretionary income, Market strategy, Multiple media channels, Emphasis on benefits of retirement, Examples.] **122**

Scaling the Media Web. Nancy Shepherdson and Heather Holliday, *American Demographics*, 22 (October 2000), pp. 60–64 [Discussion, Print media, Impacts, Internet, Market strategy, Experiments, Integrated media experiences, Target markets, Advertising, Examples] **123**

A Comparative Analysis of Three Communication Formats: Advertising, Infomercial, and Direct Experience. Mandeep

Singh, Siva K. Balasubramanian, and Goutam Chakraborty, *Journal of Advertising*, 29 (Winter 2000), pp. 59–75 [Literature review, Theoretical framework, Hypotheses, Two experiments, Impacts, Variables (recall, attitudinal, purchase intent), Optimal message length, Statistical analysis] **124**

Negative Comparative Advertising: Evidence Favoring Fine-Tuning. Alina B. Sorescu and Betsy D. Gelb, *Journal of Advertising*, 29 (Winter 2000), pp. 25–40. [Literature review, Hypotheses, Two studies, Perceptions, Most favorably rated message contains negative elements, Impacts, Attacking rival brand's product features versus smearing the corporation, Statistical analysis.] **125**

Franchise Owner–Operators and Employee–Managers: The Case of the Out-Door Sign. Audhesh K. Paswan and Joyce A. Young, *Journal of Business and Entrepreneurship*, 12 (October 2000), pp. 1–13. [Literature review, Hypotheses, Survey of franchise/retail unit owners and managers, Perceptions, Attributes, Material, Appearance, Integrity, Repair, Design, Installation, Statistical analysis, Agency theory.] **126**

2.10 Personal Selling

See also 34, 61, 101, 132, 134, 137, 185, 202, 208

How First Impressions of a Customer Impact Effectiveness in an Initial Sales Encounter. Kenneth R. Evans, Robert E. Kleine III, Timothy D. Landry, and Lawrence A. Crosby, *Journal of the Academy of Marketing Science*, 28 (Fall 2000), pp. 512–26. [Literature review, Hypotheses, Experiment (sales dyads), Satisfaction, Relationship building, Impacts, Assignment to customer category, Confidence and attitude toward assignment, Category similarity and complexity, Statistical analysis, Implications.] **127**

Disclosure and Its Reciprocity as Predictors of Key Outcomes of an Initial Sales Encounter. Richard S Jacobs, Kenneth R. Evans, Robert E. Kleine III, and Timothy D. Landry, *Journal of Personal Selling and Sales Management*, 21 (Winter 2001), pp. 51–61. [Literature review, Conceptual framework, Hypotheses, Experiment, Elements of task and social disclosure differentially influence customer perceptions of interaction quality and business relationship potential.] **128**

Customer Identities: Customers as Commercial Friends, Customer Coworkers or Business Acquaintances. John E Swan, Cathy Goodwin, Michael A Mayo, and Lynne D. Richardson, *Journal of Personal Selling and Sales Management*, 21 (Winter 2001), pp 29–37. [Theoretical discussion, In-depth interviews with salespeople, Impacts, Relationship elements, Assessment, Managerial implications.] **129**

The Effect of Sales Force Adoption on New Product Selling Performance. Erik Jan Hultink and Kwaku Atuahene-Gima, *Journal of Product Innovation Management*, 17 (November 2000), pp. 435–50. [Literature review, Model presentation, Hypotheses, Survey of high technology firms, Impacts, Sales controls, Supervisory factors, Market volatility, Statistical analysis, The Netherlands.] **130**

Change Happens—Deal With It. Vincent Alonzo, *Sales and Marketing Management*, 152 (December 2000), pp. 42, 44. [Lifestyle pressures, Business and personal goals, Salesperson expertise, Training, Success measurement, Compensation, Management changes, Assessment] **131**

2.11 Sales Management

See also 61, 72, 101, 118, 127, 128, 129, 130, 131, 185, 208

Building and Assessing Cultural Diversity Skills: Implications for Sales Training. Victoria D Bush and Thomas N. Ingram, *Industrial Marketing Management*, 30 (January 2001), pp. 65–76. [Literature review, Hypotheses, Simulation, Effects, Attributional confidence, Cultural diversity skills, Ability to deal with psychological stress, Interpersonal relationships, Communication styles, Statistical analysis, Implications] **132**

The Extent and Formality of Sales Agency Evaluations of Principals. Nancy J. Merritt and Stephen J. Newell, *Industrial Marketing Management*, 30 (January 2001), pp. 37–49. [Literature review; Hypotheses; Survey, Overall, formality of evaluations was quite low, but agencies using some degree of formal procedures indicated better performance and better relationships and overall satisfaction with principals than firms using extremely informal evaluations.] **133**

Selection Decision Making by Sales Managers and Human Resource Managers: Decision Impact, Decision Frame and Time of Valuation. Greg W. Marshall, Thomas H Stone, and I.M Jawahar, *Journal of Personal Selling and Sales Management*, 21 (Winter 2001), pp. 19–28. [Literature review, Hypotheses, Field experiment, Decision impacts, Sales or HR managers, Domain (loss or gain), Outcome of decision known soon or in the more distant future, Candidates' riskiness, Performance potential, Interactions, Statistical analysis, Managerial implications.] **134**

The Selling Orientation–Customer Orientation (S.O.C.O.) Scale: A Proposed Short Form. Raymond W. Thomas, Geoffrey N. Soutar, and Maria M. Ryan, *Journal of Personal Selling and Sales Management*, 21 (Winter 2001), pp. 63–69. [Discussion, Techniques, Reduction of items, Impacts, Dimensionality and consistency, Research implications.] **135**

The Traits of Great Sales Forces. Andy Cohen, *Sales and Marketing Management*, 152 (October 2000), pp. 67–70, 72. [Survey, Criteria, Attraction and retention of high-performing salespeople, Customer orientation, Profitable relationships, Sales and marketing integration, Innovation, Customer loyalty, Leveraging of technology and E-commerce, Speed to market, Globalization, Examples] **136**

Falling Stars. Betsy Cummings, *Sales and Marketing Management*, 152 (December 2000), pp 54–58, 60, 62. [Reasons to fire top sales reps, Lying, cheating, and stealing; Losing control; Bad attitude, Perpetual slump; Selling sex, Assessment.] **137**

Training on the Fly. Kevin Dobbs, *Sales and Marketing Management*, 152 (November 2000), pp. 92–94, 96, 98. [Corporate culture, Informal workplace learning, Online training, Cost savings, Examples] **138**

Hire Power. Elana Harris, *Sales and Marketing Management*, 152 (October 2000), pp 88–90, 92, 94, 96, 98 [Recruitment, Factors, Take a marketing approach, Look within, Constantly recruit, Use of the Internet, Use flexible pay plans, Assessment.] **139**

Control Freaks. Melinda Ligos, *Sales and Marketing Management*, 152 (October 2000), pp 76–78, 80, 82, 84, 86 [Micromanaging sales managers, Overbearing tactics, Types (equalizer, desk general, wannabe, dictator, Mr. Makework), Assessment.] **140**

3. SPECIAL MARKETING APPLICATIONS

3.1 Industrial

See also 17, 29, 47, 54, 68, 69, 70, 71, 82, 87, 89, 90, 92, 93, 94, 112, 115, 130, 159, 160, 172, 174, 187, 195, 205

The Purchasing of Full-Service Contracts: An Exploratory Study Within the Industrial Maintenance Market. Stefan Stremersch, Stefan Wuyts, and Ruud T. Frambach, *Industrial Marketing Management*, 30 (January 2001), pp 1–12. [Literature review, Model presentation, In-depth interviews and conjoint experiment, Importance of full-service attributes, Buying process (buy class, dollar value, complexity, time commitment), Impacts, Full service offering's effect on general plant performance rather than on specific maintenance costs, The Netherlands.] **141**

Growth Means More Consolidation, More Services. James Carbone, *Purchasing*, 129 (October 19, 2000), pp 48–49, 52, 55–64. [Electronics contract manufacturing; Original equipment manufacturers, Demand for supply chain management, purchasing expertise, and leading-edge manufacturing; Integrated process, International; Cost savings; Rankings; Sales; Statistical data.] 142

Electronics Jolt Medical Landscape. Brian Milligan, *Purchasing*, 129 (November 16, 2000), pp. 66–67, 70, 72, 74, 77. [Discussion, Cost savings, Better performance, Complex procedures, Parts shortages, Custom-made products, Miniaturization, Competition, Supply chain management, Design phase, Partnering, Internet activity, Online solutions, Trade exchanges, Examples.] 143

Buyers Mull Turning Outsourcing into a Strategy. Jim Morgan, *Purchasing*, 129 (October 19, 2000), pp. 24–26, 28. [Studies, Current importance, Type of goods and services being outsourced, Reasons, Purchasing's involvement, Results in lowered inventories, Cost savings, Improvements in quality, Assessment] 144

3.2 Nonprofit, Political, and Social Causes

See also 2, 17, 169, 211

Retirement Redefined. Rebecca Gardyn, *American Demographics*, 22 (November 2000), pp. 52, 54–57 [Trends, Older people, Lifestyles, Utilizing untapped talents, Volunteerism, Educational and skill development, Employers need to overhaul their recruitment and retention practices, Senior-focused career counseling, Statistical data.] 145

Senior Living: Beyond the Nursing Home. Joan Raymond, *American Demographics*, 22 (November 2000), pp. 58–63. [Business growth, Senior-care environments, Types of facilities, Market strategy, Perceptions, Services, Quality-of-life issues, Examples.] 146

Words Versus Actions About Organ Donation: A Four-Year Tracking Study of Attitudes and Self-Reported Behavior. Thomas J. Cosse and Terry M. Weisenberger, *Journal of Business Research*, 50 (December 2000), pp. 297–303. [Cross-sectional surveys, Impacts, Relationship with direct experience (knowing an organ recipient) and intermediate behaviors (donating blood, signing an organ donation card), Statistical analysis, Managerial implications] 147

Advertisement Style and the Recruitment of Charity Volunteers. Roger Bennett and Rita Kottasz, *Journal of Nonprofit and Public Sector Marketing*, 8 (No 2, 2000), pp. 45–63. [Literature review; Altruistic versus egoistical motives; Three samples, Although less altruistically inclined people responded more positively to advertisements which emphasized the material and emotional benefits of volunteering, it was not the case that people who displayed high altruistic tendency were more attracted by altruistic recruitment messages; UK.] 148

An Assessment of Community Concerns and Behaviors: Comparing Relevant Demographic and Lifestyle Characteristics. Joseph D. Cangelosi Jr., F Scott Markham, and Emogene Fox, *Journal of Nonprofit and Public Sector Marketing*, 8 (No 3, 2000), pp. 65–81. [Literature review, Hospital conducted community assessment survey, Attitudes, Diseases, Behaviors, Crime/environment, Access issues, Profiling of results, Statistical analysis, Marketing implications.] 149

Empirical Evidence of Marketing Practices in the Nonprofit Sector: The Case of Performing Arts. Manuel Cuadrado, Irene Gil, and Alejandro Molla, *Journal of Nonprofit and Public Sector Marketing*, 8 (No. 3, 2000), pp 15–24. [Literature review, Survey of organizations, Factors, Information, Ticket, Notoriety, Supply, Services, Quality, Groups (neutral, involved, image conscious, Statistical analysis, Spain] 150

Generation X and Religion: Evaluating and Improving Existing Distribution Strategies. Mark A. Mitchell, Robert D Montgomery, and Gregory B. Turner, *Journal of Nonprofit and Public Sector Marketing*, 8 (No. 2, 2000), pp. 3–14. [Literature review, Delivery environments, Delivery times and access, Organizational culture, Message delivery methods, Supporting services, Outreach efforts, Assessment, Solutions.] 151

A Customer Value Perspective in the Nonprofit Marketing Context: Expanding the Means–End Chain for Multiple Stakeholders. Ed Petkus Jr., *Journal of Nonprofit and Public Sector Marketing*, 8 (No. 3, 2000), pp. 25–37. [Literature review, Model presentation, Customer value hierarchy, Functional versus psychosocial consequences, Propositions, Strategic direction and satisfaction measurement.] 152

Age, Income, and Gender: Demographic Determinants of Community Theater Patronage. Marla Royne Stafford and Carolyn Tripp, *Journal of Nonprofit and Public Sector Marketing*, 8 (No 2, 2000), pp. 29–43 [Literature review, Survey of patrons, Impacts, People, Technical quality, Production, Differences among demographic groups, Statistical analysis, Implications] 153

Achieving Competitive Advantage Through the Application of Open Systems Theory and the Development of Strategic Alliances: A Guide for Managers of Nonprofit Organizations. Becky J Starnes, *Journal of Nonprofit and Public Sector Marketing*, 8 (No. 2, 2000), pp. 15–27. [Discussion; Horizontal, vertical, internal, and osmotic alliances; Examples.] 154

Marketing Museums: An Empirical Investigation Among Museum Visitors. Ugur Yucelt, *Journal of Nonprofit and Public Sector Marketing*, 8 (No. 3, 2000), pp. 3–13. [Personal interviews, Impacts, Staff personnel and tour guides, Collections and offerings, Physical structure and related amenities, Distance to travel, Demographic factors, Number of visits, Factor analysis, Recommendations.] 155

The Branding of a President. Erin Strout, *Sales and Marketing Management*, 152 (October 2000), pp. 54–58, 60, 62. [Marketing campaigns, Themes, Polls and focus groups, Brand image, Public relations, Target markets, Budgets, Examples] 156

3.3 International and Comparative

See also 18, 47, 52, 54, 62, 63, 66, 82, 85, 96, 103, 113, 130, 141, 188, 207, 209

Foreign Banking in China. Man-kwong Leung, *Business Horizons*, 43 (November/December 2000), pp. 3–4. [Business growth, Government control, High level of trade and direct investment with Southeast Asia, Market potentials, Banking infrastructure, Projections.] 157

Seven Rules of International Distribution. David Arnold, *Harvard Business Review*, 78 (November/December 2000), pp 131–36. [Multinationals, "Beachhead strategy," Problems, Selection and working with local distributors, Success, Guidelines.] 158

Industrial Marketing Management, 29 (November 2000), pp. 483–622 [Eleven articles on global industrial marketing, Entering the Japanese market, Distribution strategies, Product quality, Invoicing, Agent relationships, Purchasing synergy, Legal and ethical decisions, Market position and R&D capability, Level of import and cognitive moral development, Transaction cost analysis, Market orientation and new product development, Political activities.] 159

Conceptualizing and Isolating Cultural Differences in Performance Data in International High-Tech Industrial Markets. Marcel van Birgelen, Kode Ruyter, and Martin Wetzels, *Industrial Marketing Management*, 30 (January 2001), pp. 23–35. [Literature review, Survey of customers (office equipment), Attitudes, Product, Supplier, Service call, Service visit, Impacts, Cultural dimensions, Statistical analysis, Managerial implications, The Netherlands, Norway, Austria, UK] 160

Culture as a Driving Force for Interfirm Adaptation: A Chinese Case. Tony Fang, *Industrial Marketing Management*, 30 (January 2001), pp. 51–63. [Cross-cultural business environment, Negotiations, Impacts, Sincerity, Courtesy, Reciprocity, Values, Assessment.] **161**

Countries as Brands: Canadian Products Abroad. Nicolas Papadopoulos and Louise Heslop, *Ivy Business Journal (Canada)*, 65 (November/December 2000), pp. 30–36. [Study, Product–country image, Comparisons, Evaluation (ideal country, closer ties, good products, willing to buy), Statistical data, Managerial implications.] **162**

Product Placements in Movies: A Cross-Cultural Analysis of Austrian, French and American Consumers' Attitudes Toward This Emerging, International Promotional Medium. Stephen J. Gould, Pola B. Gupta, and Sonja Grabner-Krauter, *Journal of Advertising*, 29 (Winter 2000), pp. 41–58 [Literature review, Hypotheses, Survey, Comparisons, Acceptability, Ethically versus nonethically charged products, Purchase behavior, Statistical analysis, Managerial implications] **163**

Journal of Business Research, 50 (October 2000), pp 3–137. [Twelve case studies in Latin American business, Globalizing strategies, Implementation, Machine tool industry, Personal banking, Construction and hardware manufacturing, Petrochemicals, Joint ventures, Electric power industry, Agribusiness, Family companies, Air conditioners, Tobacco industry] **164**

Market Orientation in the Transition Economies of Central Europe: Tests of the Narver and Slater Market Orientation Scales. Graham Hooley and others, *Journal of Business Research*, 50 (December 2000), pp. 273–85. [Literature review, Propositions, Survey of firms, Impacts, Business approach, Strategic priorities and objectives, Marketing strategy variables, Performance, Statistical analysis.] **165**

Regulation, Deregulation, and Free Market: The Food Manufacturing Industry in Zimbabwe. Felix T. Mavondo, *Journal of Business Research*, 50 (October 2000), pp 305–19. [Literature review, Hypotheses, Survey of firms, Variables, Marketing orientation, Planning capability, Human resource management, Management style, Innovation, Operating efficiency, Statistical analysis, Managerial implications.] **166**

Entry Barriers: A Dull-, One-, or Two-Edged Sword for Incumbents? Unraveling the Paradox from a Contingency Perspective. Jin K. Han, Namwoon Kim, and Hong-Bumm Kim, *Journal of Marketing*, 65 (January 2001), pp 1–14 [Literature review, Hypotheses, Survey of consumer product firms, Barriers (capital requirements, cost advantages, switching costs, distribution access, proprietary assets), Impacts, Effectual versus ineffectual entry deterrents, Innovativeness enablers versus inhibitors, Statistical analysis, Managerial implications, Korea.] **167**

Social Factors Influencing Export Initiation in Small and Medium-Sized Enterprises. Paul Ellis and Anthony Pecotich, *Journal of Marketing Research*, 38 (February 2001), pp 119–30 [Literature review, Study of firms, Identification of exchange partners (market research/use of official agency, trade fair, interpersonal ties), Tie types (social, business, family), Assessment, Australia] **168**

Transparency and Accountability an Integral Part of the Marketing Plan of the New European Central Bank. Alfred C. Holden, *Journal of Nonprofit and Public Sector Marketing*, 8 (No 2, 2000), pp. 65–84 [Literature review, European Economic Union, Credibility, Price stability, Monetary policy coordination among central banks, Marketing mixes, Assessment.] **169**

Making and Measuring Reputations: The Research Ranking of European Business Schools. Charles Baden-Fuller, Fabiola Ravazzolo, and Tanja Schweizer, *Long Range Planning (UK)*, 33 (October 2000), pp. 621–50. [Discussion, Methodologies, Journals, Articles published, Disciplines and countries, Comparing results with other studies, Assessment] **170**

Long-Term Success of Adaptation Strategies: Evidence from Finnish Companies. Erkki K. Laitinen, *Long Range Planning (UK)*, 33 (December 2000), pp. 805–30. [Literature review, Survey, Impacts of 1989–93 recession, Investment in new product development and marketing and in the acquisition of new customers was the most successful strategy while a strategy heavily based on negotiating finance contracts and restructuring was the most unsuccessful] **171**

Japanese Supply Chain Relationships in Recession. Richard Lamming, *Long Range Planning (UK)*, 33 (December 2000), pp. 757–78. [Discussion, Interviews with industrial UK purchasing executives and Japanese business managers, Sourcing strategies, Customer domination, Economic pressures, Projections, Assessment.] **172**

The Strategic Reaction of Domestic Firms to Foreign MNC Dominance: The Israeli Experience. Dovev Lavie and Avi Fiegenbaum, *Long Range Planning (UK)*, 33 (October 2000), pp. 651–72 [Strategic Reference Point theory, Survey of firms, Business strategy typologies (myopic, amorphous, narcissistic, adaptive), Value/price positioning, Impacts, Reputation, International experience, Organizational structure, Case studies.] **173**

Breaking into China: Strategic Considerations for Multinational Corporations. Ji Li, Gongming Qian, Kevin Lam, and Dennis Wang, *Long Range Planning (UK)*, 33 (October 2000), pp. 673–87 [Survey of firms, MNCs pursuing a capital- and technology-intensive strategy have a significantly better performance than those pursuing a labor-intensive strategy, Impacts, Ownership arrangements, Location, Statistical analysis, Electronics industry] **174**

Creating Meaningful Switching Options in International Operations. Bent Petersen, Denice Ellen Welch, and Lawrence Stephenson Welch, *Long Range Planning (UK)*, 33 (October 2000), pp 688–705. [Discussion, Matrix, Strategic alternatives (conceal, reveal, termination, integration), Interactions, Strategic flexibility, Process issues (market information, relationship development), Examples, Managerial implications.] **175**

Strategic Lessons from the Asian Crisis. Kulwant Singh and George S Yip, *Long Range Planning (UK)*, 33 (October 2000), pp. 706–29. [Discussion, Strategies, Bargain hunting for assets and making strategic purchases while prices are low, Forming new alliances to augment existing ones, Expanding while competitors are weak, Regional differences, Impacts, MNCs, Strategic responses, Examples.] **176**

3.4 Services

See also 39, 53, 63, 88, 143, 144, 146, 149, 153, 157, 169, 193

Eyes on the Prize. Alison Stein Wellner, *American Demographics*, 22 (November 2000), pp. 48–49. [Women's financial services market, Educational programs, Preparation, Retirement, Market strategy, Effectiveness, Examples.] **177**

Gurus in the Garage. Dorothy Leonard and Walter Swap, *Harvard Business Review*, 78 (November/December 2000), pp 71–73, 76–80, 82. [Mentor capitalists, Backgrounds, Provide assistance to entrepreneurs, Specialties (sculptor, psychologist, diplomat, kingmaker, talent magnet, process engineer, rainmaker), Mentoring styles, Examples.] **178**

Saving Money, Saving Lives. John Meliones, *Harvard Business Review*, 78 (November/December 2000), pp. 57–62, 64, 66–67. [Turnaround management, Hospitals, Clinicians and administrators working together, Balanced scorecard approach, Impacts, Cost per case, Performance, Case study] **179**

Just How Integrated Are Integrated Delivery Systems? Results from a National Survey. Lawton R Burns and others, *Health Care Management Review*, 26 (Winter 2001), pp. 20–39. [Literature review; Study of hospitals; Efforts to right-size the medical staff of the organization, develop new financial compensation and incentive systems for physicians, and develop physician leadership development programs; Integrative processes and market context; Statistical analysis; Implications.] **180**

Identifying Indicators of Laboratory Management Performance: A Multiple Constituency Approach. Jacqueline Zinn, Anne Zalokowski, and Lynda Hunter, *Health Care Management Review*, 26 (Winter 2001), pp. 40–53 [Discussion, Delphi technique, Panel selection, Sequencing of tasks, Performance areas identified, Application, Managerial implications.] **181**

Optimal Models for Meal-Break and Start-Time Flexibility in Continuous Tour Scheduling. Michael J. Brusco and Larry W. Jacobs, *Management Science*, 46 (December 2000), pp 1630–41. [Integer-programming models, Implicit formulation, Trade-offs among various scheduling policies, Empirical demonstration.] **182**

Managing the Delivery of Dialysis Therapy: A Multiclass Fluid Model Analysis. Stefanos A. Zenios and Prashant C Fuloria, *Management Science*, 46 (October 2000), pp 1317–36. [Health services research, Optimal equilibrium and dynamic analyses, Computational experiments, Assessment.] **183**

Smart Card Backers Focus on Encouraging Use for On-line Purchases. Patricia A Murphy, *Stores*, (December 2000), pp 76, 78. [Payments innovations, point-of-service terminals, Chip technology, International standards, Multiple applications, Examples.] **184**

4. MARKETING RESEARCH

4.1 Theory and Philosophy of Science

See also 12, 43, 44, 58, 69, 70, 93, 94, 119, 154, 173, 182, 183, 199

Toward a Theory of Business Buyer–Seller Similarity. J. David Lichtenthal and Thomas Tellefsen, *Journal of Personal Selling and Sales Management*, 21 (Winter 2001), pp. 1–14 [Literature review; Model presentation; Propositions; Internal characteristics and central route processing, Attraction, Salesperson performance and observable characteristics; Inferred group membership, characteristics, and internal similarity, Impact of information availability and issue performance, Assessment, Implications] **185**

The Importance of Organizational Structure for the Adoption of Innovations. Stephen J. DeCanio, Catherine Dibble, and Keyvan Amir-Atefi, *Management Science*, 46 (October 2000), pp 1285–99. [Organizational theory, Computational model, Numerical simulations, Impacts, Direct and structural adjustment components of changes in profitability, Implications.] **186**

Coordination of Pricing and Multiple-Period Production Across Multiple Constant Priced Goods. Stephen M. Gilbert, *Management Science*, 46 (December 2000), pp. 1602–16. [Model presentation; Assumptions; Through a set of numerical examples, the author demonstrates how a product's contribution to aggregate seasonality can increase its optimal price.] **187**

Assessing the Construct Validity of Risk Attitude. Joost M E Pennings and Ale Smidts, *Management Science*, 46 (October 2000), pp. 1337–48 [Comparisons, Measures, Expected utility model, Psychometric approach, Computer-assisted interviews, Owner–managers, Utility theory, Nomological validity, Price risk, The Netherlands.] **188**

Price-Endings When Prices Signal Quality. Mark Stiving, *Management Science*, 46 (Decenber 2000), pp. 1617–29. [Economic theory, Full and incomplete information models, Propositions, Simulation, Round prices, Field study, Retail outlets, Statistical analysis.] **189**

A Two-Echelon Repairable Inventory System with Stocking-Center-Dependent Depot Replenishment Lead Times. Yunzeng Wang, Morris A. Cohen, and Yu-Sheng Zheng, *Management Science*, 46 (November 2000), pp. 1441–53. [Literature review, METRIC approach, Assumptions, Errors, Worldwide service parts logistics network, Continuous review, One-for-one policy, Numerical analysis.] **190**

4.2 Research Methodology

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Mystery Shoppers. David J. Lipke, *American Demographics*, 22 (December 2000), pp. 41–43. [Management of customer data across channels, Market segments (in-store, catalog, e-commerce), Software packages, Customer centric, Integrated data warehouse, Personalized communication, Examples.] **191**

You've Got Surveys. David J. Lipke, *American Demographics*, 22 (November 2000), pp. 42–43, 45 [Market research, Online, Advantages, Participation rates, Ability to survey hard-to-reach respondents, Costs, Speed, Consumer panels, Contrasting approaches, Examples] **192**

The Demographic Investor. Michael J. Weiss, *American Demographics*, 22 (December 2000), pp. 48–55. [Financial impact of social trends, Reports, U.S. Census Bureau, Bureau of Labor Statistics, National Center for Health Statistics, Factors, Aging baby boomers, Rising senior population, Increasing Hispanics, Growing Gen Ys, More telecommuters, Assessment.] **193**

Generational Divide. Alison Stein Wellner, *American Demographics*, 22 (October 2000), pp. 52–56, 58 [Definition problems related to number of births in a given year, Differences between leading edge and trailing end of Baby Boom, Market segments, "Niche generations," Impacts, Market segments, Assessment.] **194**

Industrial Marketing Applications of Quantum Measurement Techniques. Pedro Alvarez and Clementina Galera, *Industrial Marketing Management*, 30 (January 2001), pp 13–22. [Study, Postacquisition evaluation, Attribute function validity, Hierarchy of criteria, Product and price "suitability," Analysis of misfits, Rasch probability, Statistical data] **195**

A Refinement and Validation of the MARKOR Scale. Ken Matsuno, John T. Mentzer, and Joseph O. Rentz, *Journal of the Academy of Marketing Science*, 28 (Fall 2000), pp. 527–39. [Literature review, Scale comparisons, Predictive validity, Improvements regarding operationalization of the market orientation construct in addition to superior psychometric properties, Implications.] **196**

Modifying Conjoint Methods to Model Managers' Reactions to Business Environmental Trends: An Application to Modeling Retailer Reactions to Sales Trends. Harmen Oppewal, Jordan J. Louviere, and Harry J.P Timmermans, *Journal of Business Research*, 50 (December 2000), pp. 245–57. [Choice responses to hypothetical scenarios are used to estimate a logit regression model that predicts retailers' probabilities of choosing actions, Statistical analysis.] **197**

Unobserved Heterogeneity as an Alternative Explanation for "Reversal" Effects in Behavioral Research. J Wesley Hutchinson, Wagner A. Kamakura, and John G Lynch Jr., *Journal of Consumer Research*, 27 (December 2000), pp. 324–44. [Literature review, Data from "between-subjects" experiments, Crossover interactions, Context effects, Impacts, A priori considerations, Derived properties, Diagnostic statistics, Results of latent class modeling, Statistical analysis.] **198**

Misleading Heuristics and Moderated Multiple Regression Models. Julie R Irwin and Gary H. McClelland, *Journal of Marketing Research*, 38 (February 2001), pp. 100–109. [Using theoretical arguments and constructed data sets, the authors describe inappropriately generalized heuristics and their misapplications; Practices for estimating, testing, and interpreting regression models that include moderated relationships.] **199**

4.3 Information Technology

See also 36, 37, 38, 39, 57, 59, 60, 72, 75, 77, 79, 83, 84, 192

Broad Appeal. Rebecca Gardyn, *American Demographics*, 22 (December 2000), pp. 30–34. [High-speed Internet access to consumers, Problems, Limited availability, High prices, Complicated installation processes, Lack of competition, Broadband companies have to help consumers navigate the learning curve, Consumers demand tailored media, Market strategy, Assessment.] **200**

Contextual Marketing: The Real Business of the Internet. David Kenny and John F. Marshall, *Harvard Business Review*, 78 (November/December 2000), pp. 119–25 [Customer relations, Web sites, Problems, Visitors, Impacts, Ubiquitous Internet, Bring message directly to customer at point of need, Electronic utilities and access technologies, Examples.] **201**

Sales Forecasting as a Knowledge Management Process. Kenneth B. Kahn and Marjorie E Adams, *Journal of Business Forecasting*, 19 (Winter 2000/2001), pp. 19–22. [Discussion, Data, Information, Knowledge, Strategies for exchanging intelligence (codification, personalization), Network typology, Empirical analysis.] **202**

Whither Operating Systems. Sunny Baker, *Journal of Business Strategy*, 21 (November/December 2000), pp. 22–27. [Discussion, Computers, Networking and connectivity, Software packages, Selection criteria (reliability, integration, deployment, scalability, speed, administrative tools, security), Assessment.] **203**

Market Intelligence: Watch Where You Click! *Purchasing*, 129 (October 19, 2000), pp. 99–116. [Net marketing makers, Market intelligence, Tracking mechanisms, Software packages, Activities of buyers and suppliers, Price transparency, Data aggregations, Market trends, Potential for targeting sales promotions, Privacy and security issues, Examples] **204**

Get Ready for the "Web" Car. Brian Milligan, *Purchasing*, 129 (December 8, 2000), pp. 74, 76–77. [Buyer–supplier partnerships, Internet technology, Wireless services, Mobile communications, Competition, Telematic system, Examples] **205**

5. OTHER TOPICS

5.1 Educational and Professional Issues

See also 6, 19, 170, 177

Winning the Talent War for Women: Sometimes It Takes a Revolution. Douglas M. McCracken, *Harvard Business Review*, 78 (November/December 2000), pp. 159–60, 162, 164–67. [Retention and advancement, Top management support, Corporate culture, Bring visibility to the effort, Workshops, Dialogue, Operational steps, Accountability, Work–life balance for men and women, Case study, Professional services industry.] **206**

Firm-Level Export Performance Assessment: Review, Evaluation, and Development. Constantine S. Katsikeas, Leonidas C. Leonidou, and Neil A. Morgan, *Journal of the Academy of Marketing Science*, 28 (Fall 2000), pp. 493–511. [Examination of more than 100 articles, Measures (economic, noneconomic, generic), Effectiveness (operationalization, sampling, data collection), Guidelines for improvement, Implications.] **207**

Sales Manager Behavior Control Strategy and Its Consequences: The Impact of Gender Differences. Nigel F. Piercy, David W. Cravens, and Nikala Lane, *Journal of Personal Selling and Sales Management*, 21 (Winter 2001), pp. 39–49. [Literature review, Conceptual framework, Hypotheses, Survey of salespeople, Female versus male field sales managers, Comparisons, Control attitudes and job stress, Salesperson work outcomes, Statistical analysis, Managerial implications, US, UK.] **208**

Women Business Owners in France: The Issue of Financing Discrimination. Muriel Orhan, *Journal of Small Business Management*, 29 (January 2001), pp. 95–102. [Survey of male and female entrepreneurs, Attitudes, Motivations, Competencies, Preferences for developing the firm, Assessment.] **209**

5.2 General Marketing

See also 28, 88, 150

Fundamental Changes in Marketing Organization: The Movement Toward a Customer-Focused Organizational Structure. Christian Homburg, John P. Workman Jr, and Ove Jensen, *Journal of the Academy of Marketing Science*, 28 (Fall 2000), pp. 459–78. [Literature review, Propositions, Interviews with managers, Changes involving primary marketing coordinators and increasing dispersion of marketing activities, Typical transitions, Implementation issues, Systems, Human resource management, Assessment, Implications.] **210**

Stimulating Government Technology Commercialization: A Marketing Perspective for Technology Transfer. William S. Piper and Kimball P Marshall, *Journal of Nonprofit and Public Sector Marketing*, 8 (No. 3, 2000), pp. 51–63 [Government-originated technology transfer marketing plan (goals and objectives, business sector target market segments, distribution channels, outreach activities, infrastructure development and management controls), Assessment.] **211**

Book Reviews

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The Influence of Philosophy, Philosophies, and Philosophers on a Marketer's Scholarship

Many, if not most, marketing scholars are strongly influenced by a nonmarketing discipline, such as economics, social psychology, sociology, statistics, or mathematics. This essay recounts how my own work has been so strongly influenced by the discipline of philosophy and by the tenets of specific philosophies and the works of specific philosophers. As an engineering major at Ohio University in the late 1950s and early 1960s, I took courses that focused on the sciences, mathematics, and engineering. Nonetheless, being required to take at least one course in the humanities, I took an introductory course in philosophy. The course was the typical (and much maligned) survey course. We read and discussed snippets of the works of such philosophers as Plato, Aristotle, David Hume, Immanuel Kant, and John Stuart Mill. Especially interesting, I found, was the "classical" realism of G.E. Moore and Bertrand Russell.[1]

In retrospect, several values that have guided my scholarship were significantly informed by that single, introductory philosophy course (the only philosophy course I ever took). First, I internalized the view that Plato's "critical discussion" was essential for knowledge development. In this view, the pursuit of truth is furthered by proposing penetrating, highly critical questions, which are to be followed by equally insightful, thoughtful answers. Second, civility in critical discussion is a virtue. For example, the use of ad hominem discourse is proscribed: Discussion should always be directed at the ideas of people, not the people themselves. Third, the use of sophistry is prohibited: It is impermissible to employ disingenuous argumentation. Fourth, reason and evidence should be respected: The fallibility of method implies being open to alternative views that provide well-reasoned arguments and evidence. Fifth, clarity in scholarship is a virtue: To be obscure should never be confused with being profound.

Upon graduating from Ohio University in 1962, I accepted a sales position with Hercules Inc., a large chemical company. Although I found selling plastics to the automotive and appliance industries to be an interesting, challenging, and valuable experience, I had always been interested in education. After deciding on a major career shift, in March of 1966 I entered the Ph.D. program in marketing at Michigan State University. There I found my most interesting course to be a seminar in marketing theory taught by B.J. "Bud" LaLonde in the summer of 1967. The course focused on theory development and critical evaluation of the works of Wroe Alderson and other marketing theorists. Although class discussion was vigorous, I noticed that students often seemed to be "talking past" one another rather than engaging in truly productive interaction. The reasons for the frequently unproductive discussions were not apparent to me.

My wife Suzanne, our daughter Michelle, and I lived in married student housing. One evening, a new neighbor, a doctoral student in philosophy, invited us to play bridge. Most curiously, throughout the evening (and in discussions thereafter), he was able to analyze critically the issues debated in our marketing theory class even though he knew nothing about marketing. He showed me that a major reason our class discussion was often unproductive was that we were failing to separate our substantive disagreements from those of a purely semantic nature. That is, as long as participants were using such terms as "science," "theory," "explanation," "hypotheses," "axioms," and "laws" in radically different ways, our semantic differences would impede us from resolving substantive disagreements. My philosophy neighbor introduced me to analytical philosophy, as exemplified by the works of Carl Hempel, Richard Rudner, and Ernest Nagel. The critical discussions I found in the works of these philosophers of science impressed me with their clarity of exposition and logical structure. As a consequence, it seemed to me that students taking marketing theory courses could benefit greatly from being exposed to the "tool kit" of the philosophy of science.

After graduating from Michigan State University in December 1968, I joined the faculty at the University of

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[1] Classical realism holds that, in contrast with idealism, the world exists independently of its being perceived. Classical realism is but one of the four fundamental tenets of what modern philosophy of science refers to as "scientific realism." As I discuss elsewhere (Hunt 1990), the other three tenets are fallibilistic realism, critical realism, and inductive realism.

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Wisconsin, Madison, and was assigned the marketing theory course. Relying heavily on LaLonde's syllabus, I added works from the philosophy of science in an effort to provide students a framework within which vigorous, rigorous, and productive discussion might take place. Although the course was well received, each time I taught it students complained that they had difficulty applying philosophy of science concepts and theories to the works of contemporary marketing theorists. Class discussion still suffered.

In an attempt to respond to students' complaints, in the summer of 1973 I began working on a monograph with the aim of integrating the philosophy of science with marketing theory and research. The book was not to be on the philosophy of science, or about it, but rather to use philosophy of science to illuminate issues in marketing theory. At that time, philosophers of science were debating the merits of three rival philosophical "isms": logical empiricism, scientific realism, and historical ("Kuhnian") relativism. Believing that historical relativism offered little to marketing theory and research, I adopted an eclectic blend of logical empiricism and realism, which I referred to as "contemporary empiricism." Two years' labor resulted in "The Nature and Scope of Marketing" (Hunt 1976b) and the first edition of *Marketing Theory* (Hunt 1976a). Throughout the 150-page monograph, often referred to as the "little green book," I endeavored to make the critical discussions civil, present faithful characterizations of others' views (I used quotations liberally), respect reason and evidence, and seek clarity. As I stated in the preface:

> Most readers will disagree with some parts of the conceptual framework herein presented Some readers will disagree with most of it. Such disagreement is welcomed, since one objective of the monograph is to stimulate discussion of the fundamental issues underlying marketing theory and research. I only hope that I have made my positions clear enough to assist critics in their efforts to show where I am in error I would rather be found wrong than obtuse (Hunt 1976a)

Grid Inc., a small, relatively new publisher of academic books in Columbus, Ohio, published the book. I am frequently asked, "Why did you choose Grid?" The decision was actually quite simple. I approached two dozen publishers with the book proposal, and each politely informed me that, though their reviewers believed the proposed monograph had merit, the size of the market (i.e., doctoral theory seminars) was too small. Thus, all publishers, save one, rejected it. The exception was Grid, headed by James Wilson and Nils Anderson. Therefore, I "chose" Grid (and will always be indebted to Jim and Nils). Although the first edition of *Marketing Theory*, spurred by the "Nature and Scope of Marketing" article, was favorably reviewed and quickly became the text of choice for marketing theory courses, the publishers were correct: Even with the 1979 Japanese translation, the book's annual sales never exceeded a few hundred copies.

In November of 1979, I received an offer to join the faculty at Texas Tech University. Though we had "put down roots" in Madison, my wife and I decided to move to Lubbock, Texas, in the Fall of 1980. Shortly thereafter, three events significantly influenced my philosophy of science research program. First, Gil Churchill called and asked if I would consider doing a revision of *Marketing Theory* for Richard D. Irwin Inc. After much discussion, we agreed on a version that would (1) revise the six chapters in the little green book, (2) add a chapter titled "Theory: Issues and Aspects," and (3) add several readings to the book to make it a more complete package for marketing theory courses. The second event was a call from Ron Bush asking me to cochair, with him, a special American Marketing Association conference on marketing theory to be held in San Antonio, Texas, in February 1982. I accepted his invitation. The third event was reading an article in the *Philosophy of Science* by Harvey Siegel (1980), a philosopher of education, on the "contexts" of discovery and justification. Admiring the logical approach of the article, I decided to add it as a reading in my theory seminar.

Throughout 1981, I worked on revising *Marketing Theory* and helped Ron Bush develop the program for the theory conference. We sought a prominent philosopher of social science to make a major presentation on current issues in the philosophy of science. Ron suggested May Brodbeck, I agreed she was a good choice, and she graciously accepted our invitation. We scheduled her talk for the first session of Monday morning, February 8. The following two sessions were to be on the same topic, with a panel of philosophically oriented marketing academics: Paul Anderson, Richard Lutz, Jerry Olson, Michael Ryan, and Gerald Zaltman. J. Paul Peter agreed to chair the session, and I participated as well.

We underestimated the interest in the three sessions, for the small room was packed and many attendees had to stand. May's presentation summarized the historical relativists' views on science: (1) There is no theory-independent observation language, (2) science cannot be objective, (3) all theories are equally viable, (4) theories and paradigms are incommensurable, (5) truth is an illusion, and (6) the practice of science is but a game. She then defended the practice of science, the pursuit of truth, and the possibility of objectivity using the tools of logical empiricism. In the discussion that followed, several panel members criticized logical empiricism as not giving an adequate or accurate account of the practice of science and offered spirited defenses of the historical relativists' views of science.

The spirited, but always civil, discussions in the three sessions prompted several "hallway debates" throughout the rest of the conference. The consensus seemed to be that the relativist approach to science had much more to offer marketing than did May's logical empiricism or my own eclectic contemporary empiricism. Accordingly, I felt an obligation to include a transcript of the sessions in the Irwin edition of *Marketing Theory* and invite J. Paul Peter and Paul Anderson to contribute additional position papers. J. Paul accepted my invitation; Paul cordially declined. The final version of the Irwin edition (Hunt 1983), often referred to as the "big red book," contained the revised text and 23 articles, including four that favored relativism and the Siegel (1980) article previously mentioned. Similar to the little green book, the red version became the text of choice for theory courses but sold only a few hundred copies per year.

Throughout the 1980s, relativist writings in marketing proliferated. Five major forms of relativism were advocated:

cultural, ethical, rationality, reality, and conceptual framework. "Relativism," it was noted, is a term of art from philosophy. All genuine forms of relativism have two theses: (1) the relativity thesis that something is relative to something else and (2) the nonevaluation thesis that there are no objective standards for evaluating across the various kinds of "something else." For example, "reality relativism" (i.e., "social constructionism") holds that (1) what comes to be known as reality in science is constructed by individuals relative to their language (or group, social class, theory, paradigm, culture, worldview, or Weltanschauung), and (2) what comes to count as reality cannot be evaluated objectively, impartially, or nonarbitrarily across different languages (or groups, etc.).

Also throughout the 1980s, many writers were advocating "alternative ways of knowing," including such qualitative approaches as naturalistic inquiry, humanistic inquiry, ethnographic methods, historical methods, critical theory, literary explication, interpretivism, and postmodernism. The debate over these alternative ways merged with the relativism debate, because many advocates of qualitative methods adopted relativism as a philosophical foundation. (Hereafter, both debates are referred to as simply "the philosophy debates.")

After the 1983 Irwin edition, I believed I would never again revise *Marketing Theory*. Indeed, most of my efforts were devoted to my ethics research program.[2] However, it became clear that since 1982, the philosophy debates were becoming increasingly unproductive: Discussions of ideas degenerated into ad hominem debates, epistemology morphed into "epistobabble" (Coyne 1982), honest mischaracterizations became "nastiness and purposeful distortions" (Hirschmann 1989, p. 209), and a concern for civility reverted to "ridicule" (Pechmann 1990, p. 7). Furthermore, the nihilistic implications of relativism were becoming clear. For example, advocates of reality relativism were arguing that the Holocaust was a socially constructed reality, only one of many multiple realities (Lincoln and Guba 1985, p. 84). Because such a view would imply the nihilistic conclusion that the Holocaust's occurrence or nonoccurrence could not be objectively appraised independently of the worldview of a person's social grouping—that is, there is no *truth* to the matter—I found this view disturbing. Therefore, by 1988 I was actively doing research on a third version of *Marketing Theory.*

I believed that a major factor contributing to the muddled status of the philosophy debates was a lack of understanding—on both sides—of logical positivism and logical empiricism. If participants had an accurate understanding of (1) what positions the logical positivists and empiricists actually espoused and rejected and (2) how positivism differs from other philosophical "isms," the debates could be raised to a more informed level. Both Kenneth Ketner, an advocate of Peirce's "pragmaticism," and Harvey Siegel, whose work I had included in the red book, suggested that the historical approach might be an effective way of explicating positivism. As an advocate of qualitative methods (Hunt 1989a, 1994b), I was receptive to their suggestion.

Ken's counsel led me to the work of Peter Manicas (1987) and Harvey's to that of Denis Phillips (1987). These philosophers' historical approach revealed that the philosophy debates throughout the social sciences were as muddled as those in marketing. Following their lead, I decided to trace the historical development of the fundamental tenets of logical positivism, logical empiricism, historical relativism, historical empiricism, and scientific realism However, I found it difficult to explain these "isms" without at least briefly discussing classical realism and Hegelian idealism. Unfortunately, I could find no way to enable readers to comprehend Hegelian idealism without discussing classical rationalism and classical empiricism. At last, I recognized that I might as well start at "the beginning" of Western philosophy—Platonism.

My historical research culminated in *Modern Marketing Theory* (Hunt 1991a), called "the blue book," which was published by South-Western on the favorable recommendation of James R. Sitlington Jr. The blue book contained (1) revisions of the seven chapters in the red book, (2) new readings, and (3) four new chapters in a section titled "Philosophy of Science: Historical Perspectives and Current Status." Consistent with the values internalized early in my career, the preface's epigraph quoted the Marquis de Vauvenargues: "For the philosopher, clarity is a matter of good faith." Like its predecessors, *Modern Marketing Theory* sold several hundred copies per year.

In addition to the blue book, my historical research spawned a series of articles (Hunt 1989a, b, 1990, 1991b, 1992a, b, 1993a, b, 1994a, b, c, 1995a) that critically evaluated issues in the philosophy debates. Here, I would like to briefly discuss three questions and identify the philosophical works that grounded my analyses: (1) Does positivism dominate marketing? (2) Is objectivity in science possible? (3) Is truth an appropriate goal?

Does positivism dominate marketing and other social sciences? The philosophy debates answered yes to this question, which was then often followed by the "positivism is dead" argument:

1. Positivist research (i.e., research guided by the tenets of the logical positivists and/or the logical empiricists) dominates marketing and social science inquiry
2. Positivist research reifies unobservables and is quantitative, deterministic, causality seeking, realist, functionalist, and/or objectivist.
3. Positivism has been shown to be dead (or thoroughly discredited) in philosophy of science.
4. Therefore, all research that is quantitative, deterministic, causality seeking, and so on is also discredited.
5. Therefore, researchers should adopt some form of relativism and qualitative methodology.

My research on this issue drew heavily on Ayer (1959), Bergmann (1967), Joergensen (1970), Manicas (1987), Phillips (1987), and Suppe (1977). The sources enabled me to show in the blue book and several articles (Hunt 1989b, 1991b, 1994c, 1995a) that research guided by positivism (1) would not necessarily be either quantitative or deterministic, (2) would avoid metaphysical concepts such as "cause," (3) would reject the scientific realist ontology, (4) would be leery of functionalist explanations, and (5) could not possibly engage in reification.[3] Therefore, I showed that the philosophy debates were muddled, at least in part, because they started from the false premise that marketing and social science are dominated by positivism.[4]

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[2] See Chonko and Hunt (1985); Chonko, Hunt, and Howell (1987); Goolsby and Hunt (1992), Hunt and Chonko (1984, 1987); Hunt, Chonko, and Wilcox (1984); Hunt and Vasquez-Parraga (1993), Hunt and Vitell (1986, 1992); Hunt, Wood, and Chonko (1989), Sparks and Hunt (1998); and Vitell and Hunt (1990).

Is objectivity in science possible? The debates answered no to this question on five grounds: (1) The language of a culture determines the reality that members of that culture will see, that is, "linguistic relativism." (2) The paradigms that researchers hold are incommensurable. (3) Theories are underdetermined by facts, that is, "Humean skepticism." (4) The psychology of perception informs us that a theory-free observation language is impossible. (5) All epistemically significant observations are theory laden. I developed a paper targeted for *Journal of Marketing Research* that responded to each of the five arguments and then affirmed the goal of objectivity in marketing research. The journal rejected the paper because, reviewers maintained, "most people in marketing regard this 'debate' as silly," and the "reason that the bulk of the ... [debate] has been published somewhere other than *JMR* is because ... [it] tends not to tell a reader much new." I then submitted the paper to *Journal of Marketing*, and (ultimately, after much back-and-forth) it was accepted (Hunt 1993b). The ideas in the *JM* article, "Objectivity," then formed the foundation for a realist theory of empirical testing that was later published in the philosophy of science literature (Hunt 1994a).

Most of the arguments in "Objectivity" were developed during my research for the blue book. A major exception was the analysis of number 5, the "theory-laden" claim. In 1991 I read an article in *Philosophy of Science* on the objectivity of empirical research by John Greenwood (1990) He argued that advocates of the argument that theory-laden data doom objectivity make two critical mistakes. First, they fail to distinguish between the explanatory theories to be tested by data and the measurement theories informing the percepts that become the data that are then used for testing the explanatory theories. Second, they fail to note that it is not a theory-free observation language that is necessary for objectivity, but a theory-neutral observation language.[5] That is, measurement theories must not "beg the question": They must not presume the truth of the explanatory theories being tested. Greenwood's (1990) arguments enabled me, in "Objectivity," to refute the last of the five claims against objectivity. When John's considerate review of the final draft concurred, it was ready for the tortuous path through *JMR* and *JM*.

Is the development of true theories and the rejection of false ones an appropriate goal? The answer of no to this question, common in the philosophy debates, was based on several closely related arguments. In the blue book and an article, "Truth" (Hunt 1990), I critically examined the major ones. One of the most prominent arguments was the "falsity of convergent realism":

1. (a) Truly referential theories will be "successful," and conversely, (b) "successful" theories will contain central terms that genuinely refer.
2. However, it is easy to find historical examples of referential theories that were unsuccessful and successful theories that were not referential.
3. Therefore, the theory of convergent realism is false.
4. Thus, because the cognitive aim of truth is linked ineluctably with realism, truth is an inappropriate aim for science and should be abandoned.

No other philosopher has influenced my scholarship as much as the aforementioned Harvey Siegel. In a series of articles that culminated in his impeccably argued book (1987), he showed that all varieties of epistemological relativism yet advanced (including those of Protagoras, Thomas Kuhn, Jack Meiland, Gerald Doppelt, Harold Brown, Stephen Toulmin, and Larry Laudon), are self-refuting and thus incoherent. That is, all arguments for all forms of philosophical relativism contain their own refutation. Siegel's work pointed the way toward evaluating marketing's own relativism.

Consider closely the "falsity of convergent realism" argument. Note that it claims that truth should be abandoned as a goal because a particular theory of science (convergent realism) is false. But the claim that the assertions of realism are false is unintelligible without the presumption that under different circumstances, they could have been true. Thus, marketing's relativism uses the concepts truth and falsity in the very argument that purportedly demonstrates that truth is inappropriate for science. Such an argument fails minimum standards for coherence—it makes no sense. And making sense, I argued (then and now), should be the minimum desideratum for marketing science.

In conclusion, marketing scholars are often influenced strongly by some nonmarketing discipline This essay has attempted to reconstruct how my own scholarship benefited greatly from an early exposure to philosophy, from the later study of specific philosophies, and from the even later interactions with and kind assistance of particular philosophers. No one but I am responsible for the errors in my works. But many, including scores of scholars whose contributions the space limitations of this brief essay prevent me from acknowledging, share credit for whatever illumination my works have provided on issues in the philosophy of marketing in general and marketing science in particular.[6] Starting in the mid-1990s, my research program shifted toward developing the resource-advantage (R-A) theory of competition.[7] As of this writing, there are tentative plans for a (final?) revision of *Marketing Theory*. If the plans materialize, it will no doubt sell several hundred copies per year.[8]

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[3] On the issue of reification, in particular, readers should consult Hunt (1989b, 1992a) and Levin (1991)

[4] Indeed, in Hunt (1991b, 1994c, 1995a), I argue that neither marketing nor management has a dominant paradigm.

[5] Just as science is not, nor would it be desirable for it to be, value free, scientific observation is not, nor would it be desirable for it to be, theory free

[6] In an extraordinary display of intercollegial generosity, several philosophers of science, only one of whom I had met personally at the time, graciously reviewed drafts of the blue book: Robert L. Causey (University of Texas, Austin), Martin Hollis (University of East Anglia, United Kingdom), Evan K. Jobe (Texas Tech University), John Kekes (State University of New York at Albany), Michael Krausz (Bryn Mawr College), Jarrett Leplin (University of North Carolina at Greensboro), Michael E. Levin (City College, City University of New York), Steven Lukes (Oxford University), Paul E Meehl (University of Minnesota), Jack W Meiland (University of Michigan), Denis C. Phillips (Stanford University), Hilary Putnam (Harvard University), Israel Scheffler (Harvard University), Harvey Siegel (University of Miami), and David Stove (University of Sydney)

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[7] See Hunt (1995b, 1997a, b, c, d, 1998, 1999, 2000a, b, c, d, 2001a, b); Hunt and Arnett (2001); Hunt and Duhan (2001); Hunt and Lambe (2000); Hunt, Lambe, and Wittman (2001); and Hunt and Morgan (1995, 1996, 1997).

[8] Since this essay was written, I have signed a contract with M.E. Sharpe to provide it with a revision of *Marketing Theory*.

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Marketing Management Support Systems: Principles, Tools, and Implementation

by Berend Wierenga and Gerrit van Bruggen (Boston, MA: Kluwer Academic Publishers, 2000, 341 pp., $120.00)

With developments in information technology, Internet marketing, modeling methodology, and marketing knowledge, it might be argued that we are entering a golden era for marketing management support systems (MMSSs). In that context, *Marketing Management Support Systems: Principles, Tools, and Implementation* provides a timely discussion as the Internet marketing era matures and the amounts of marketing data increase. Wierenga and van Bruggen (2000, p. 7) define an MMSS as "any device combining information technology, analytical capacities, marketing data, and marketing knowledge, made available to one or more marketing decision maker(s) to improve the quality of marketing management." In their book, they cover the compass in discussing the state of the art for MMSSs—marketing information systems, marketing models, marketing expert systems, marketing neural networks, and so forth. Written in a clear, logical, and reader-friendly style, avoiding unnecessary mathematical expressions, the book systematically builds the field of MMSSs. In addition, it elaborates on theoretical discussions with several real-world episodes, appropriate data, graphs, diagrams, summary tables, and exemplary systems. All these features make the book easily accessible to a variety of readers.

Types of Data-Driven MMSSs

Wierenga and van Bruggen describe three types of data-driven MMSSs: marketing models, marketing information systems, and marketing decision support systems. Marketing models, which emerged in the first half of the 1960s, are divided into predictive models (the so-called what-if simulations) and prescriptive (or normative) models. The intersection of marketing models with MMSSs comes in the second step of the familiar three-step model-building process: (1) model specification (specifying variables and their relationships), (2) model parameterization or estimation (specifying the value of parameters on the basis of data), and (3) model validation (assessing the quality of a model and its parameters).

The second of the data-driven MMSSs, marketing information systems, emerged in the second half of the 1960s to help manage data from various sources so that marketers could make more informed decisions. The most popular marketing information systems are firms' customer data, sales price data, sales data, market share data, and advertising data.

Marketing decision support systems are flexible systems that recognize the importance of two-way communication between marketers and the system. They do not replace the marketers but stimulate and support them in solving fairly unstructured problems.

Knowledge-Driven MMSSs

Unlike data-driven MMSSs, which deal with quantitative data, knowledge-driven MMSSs use the knowledge of a marketing decision maker as the primary element in solving problems. The book describes six types of knowledge-driven MMSSs: artificial intelligence, knowledge representation and processing, expert systems, case-based reasoning, neural networks, and creativity support systems.

Rooted in cognitive science, artificial intelligence emphasizes building computer programs that mimic human perception, information processing, thinking, and reasoning. Knowledge representation aims at putting knowledge into a form that makes it accessible to a problem-solving procedure. Knowledge processing carries out operations on the knowledge and derives solutions from it. Expert systems, based on the rules deduced from the knowledge of experts, use heuristic strategies to solve problems. A survey summarized in the book reveals that expert systems are commonly used in several areas of marketing, such as sales promotion, market monitoring, advertising, media planning, and new product development. Case-based reasoning systems solve new problems by retrieving and reusing relevant historical information and knowledge, revising the solutions suggested by the earlier cases, and adding the new solution to the case base. Neural networks attempt to rebuild the physical machinery of the human brain in a computer. In marketing, neural networks are used for time-series data, cross-sectional data, and data mining. Creativity support systems are computer-based tools that enhance the creativity of decision makers and help them produce new and useful ideas that keep an organization competitive in the marketplace.

Demand and Supply of MMSSs

The book draws an interesting distinction between the demand and supply of MMSSs. On the demand side, the book makes the case that marketing managers' decision-making processes are likely to be less biased if MMSSs are used. The argument is that decision makers, limited by bounded rationality, are more often satisfiers than optimizers. As satisfiers, they will be more likely to employ heuristics. These heuristics lead to biases. Four marketing problem-solving modes are identified: optimizing, reasoning, analogizing, and creating (neatly summarized by the authors by the acronym ORAC). The factors determining which of these marketing problem-solving modes will dominate in a particular decision situation are identified as (1) problem characteristics (structuredness, depth of knowledge, and availability of data), (2) decision environment characteristics (time constraints, market dynamics, and organizational culture), and (3) decision maker characteristics (cognitive style, experience, education, and skills).

On the supply side, the authors identify four components of MMSSs: (1) information technology (computer hardware, software, and communication networks), (2) analytical capacities (statistical packages, parameter-estimation procedures, marketing models, and simulation and optimizing procedures), (3) marketing data (quantitative information about variables), and (4) marketing knowledge (qualitative knowledge about marketing-related phenomena).

The authors attempt to integrate the demand and supply side of MMSSs in a framework for matching marketing problem-solving modes and MMSSs. In the framework, the three decision situations (i.e., problem characteristics, decision environmental characteristics, and decision maker characteristics) are equated with requirements for decision support, which leads to a recommendation of the type of MMSS for each specific situation. Three additional questions are raised to aid the search for the ideal MMSS/marketing situation match: (1) Should the marketing problem-solving mode actually employed be unconditionally taken as the starting point for deciding on the type of support? (2) How does the use of an MMSS affect the marketing problem-solving mode? (3) Should an MMSS reinforce the strengths of the decision makers, or should it compensate for their limitations?

In their efforts to answer the question, "Why does an MMSS succeed?" (or how the supply and demand for an MMSS are effectively matched), the authors recognize two moderating factors: design characteristics and characteristics of the implementation process. Design characteristics reflect the accessibility, system integration, adaptability, presentation of output, user interface, system quality, and information quality, whereas the characteristics of the implementation process reflect user involvement, top management support, communication about the MMSS, marketing orientation, presence of an MMSS champion, attitude of the information systems department, in-company developed versus purchased MMSS, and training of the users. So what is success for an MMSS? Success metrics include technical validity, adoption and use, user impact, and organizational impact.

Evaluation

The book provides an excellent, comprehensive account of MMSSs and will certainly help a wide variety of readers understand, research, develop, and implement MMSSs. Although the book will be most helpful to marketing managers, it will also be helpful to information technology and research and development managers; corporate strategic planners; top executives; and teachers and students at the graduate level of marketing, management, and general business.

Although marketing managers are not the developers of MMSSs, they play a crucial role in developing successful MMSSs by providing their marketing knowledge and decision-making practices as input to those systems. Indeed, they are most certainly and naturally the largest group of buyers and end users of MMSSs. When they become more knowledgeable and demanding customers of MMSSs, better and more MMSSs must be available from the systems suppliers. This book will raise marketing managers' awareness of a broad field of MMSSs and guide them to place right orders and make wise plans for customized systems for their specialized work functions. For years, MMSSs have been proposed, discussed, and dreamed in texts but not fully implemented in practice. This book gives clear pathways to the principles and identifies tools needed to develop successful MMSSs.

Information technology and research and development managers will benefit by knowing what components to consider for MMSSs, what kinds of MMSSs to develop for marketing decision makers, and how to match MMSSs to marketing decision makers' decision characteristics and other relevant circumstances. This book provides these managers with insights on what contents and elements are relevant to MMSSs and helps them perceive the importance of understanding the marketing managers' human side so as to improve collaboration with them to develop successful systems.

Corporate strategic planners and top executives may think of the short- and long-term technical and budgetary requirements essential to developing decision support systems across the corporation in an integrated and synergetic manner to enhance corporate-level decision-making efficiency. Because the use of technology has become an integral part of business, corporate strategists, including the top management, should invest in the development of better systems that enable managers to make objective and scientific decisions in ways that maximize corporate profit and achieve corporate business goals. In addition, top management should be able to calculate the impact of MMSSs on the corporation. Predictably, when well implemented, MMSSs will enhance marketing managers' decision-making efficiency, save time and other expenses, reduce failures, and increase odds of success. However, this improvement may in return require a smaller number of marketing managers. Then, MMSSs may be both good news and bad news to marketing managers—a two-edged sword, as technology often is. Therefore, top management should encourage marketing managers to prepare for their future in a smart way; managers should be trained for such technological advances to improve corporate operations and increase job security.

Marketing teachers and students at the graduate level of marketing, management, information technology, and general business will be immediate beneficiaries of Wierenga and van Bruggen's book. In particular, a class may run more effectively when it uses the book as a discussion source of historical, theoretical, and philosophical aspects of MMSSs. The learning objectives and key points in each chapter will help students focus on the main ideas of each chapter. Unfortunately, no software comes with the book. The authors should consider offering, for example, BRANDFRAME (Chapter 8) with the book, which would give students a chance to test a successful MMSS.

Because the book summarizes academic research findings, discusses major research topics of MMSSs, and presents a future research agenda, marketing researchers and doctoral students who are interested in MMSSs will find much value in the literature review and research ideas. Particularly, the biographies that cover the classic to the most recent relevant studies are a valuable asset for researchers.

The book consistently emphasizes the fit between the human side (i.e., managers) and the systems (i.e., MMSSs). This emphasis may encourage researchers to direct their research focus toward the interaction of marketing managers and the systems. For example, a manager's personality, decision-making patterns, cognitive type, marketing knowledge content and amount, marketing experiences, and ethical and cultural tendencies may be useful starting points to examine the impact of managers. As the authors indicate, academic marketing science researchers have contributed to the impressive body of marketing knowledge, methodologies, and theories. But they tend to pay less attention to making their achievements readily usable among managers. Thus, MMSS researchers need to be more actively involved in the MMSS development process, which usually has been led by data suppliers and consulting and software companies.

Readers should also consider this book's focus on introducing developments, principles, and tools of MMSSs. It is an excellent source of insight to understand and develop MMSSs. Readers who are more interested in learning and exercising established MMSSs or designing/programming new MMSSs should refer to other books that are accompanied with appropriate software programs (e.g., Lilien and Rangaswamy 1998) or with necessary programming languages.

In an age of technological revolutions such as ours, a book of this type necessarily will soon be out of date. For example, amounts of data are exponentially increasing; interactive and accordingly more-complex data are flowing from Internet marketing sites; high-speed hardware, more user-friendly software, and easier programming languages are coming onto the market in new models. All these changes require innovative and adaptive approaches to designing MMSSs. Consequently, the authors will no doubt want to provide revisions for the book to stay relevant.

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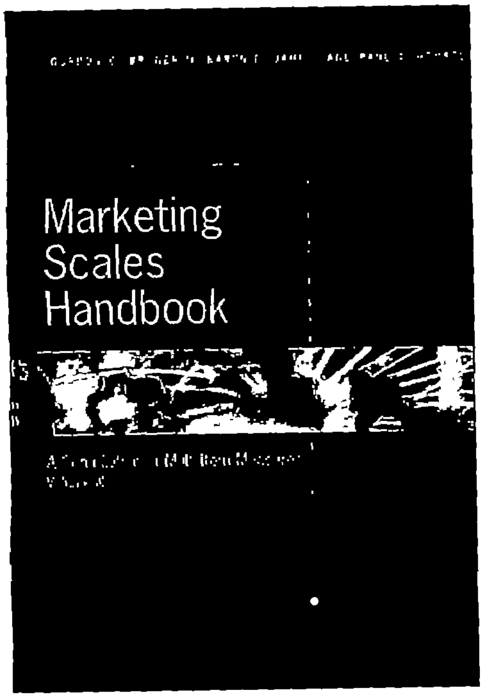

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